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REVIEW ARTICLE

Repercussions of covid-19 on the practice of physical activity and the health of people with fibromyalgia: a scoping review

Repercussões da covid-19 na prática de atividade física e na saúde de pessoas com fibromialgia: uma revisão de escopo

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ABSTRACT

Introduction: Fibromyalgia is characterized by chronic, widespread musculoskeletal pain. Among its known treatments, regular physical activity stands out. The pandemic context, however, has brought a series of changes, affecting the performance of these activities and the health of those affected by this health condition. **Objective:** To describe the repercussions caused by the COVID-19 pandemic on the practice of physical activity and on the health of people with fibromyalgia, by analyzing the studies that relate these aspects. Methods: A scoping review was conducted in the National Library of Medicine of the United States (PubMed), Latin American and Caribbean Literature in Health Sciences (Lilacs), Online Medical Literature Search and Analysis System (Medline) and Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES). The articles included were those with primary data that addressed the implications of the pandemic on the practice of physical activity and the health of people with fibromyalgia, between 2020 and 2023, in the following languages: English, Spanish or Portuguese. **Results:** Twelve studies were selected with a total of 3,403 participants. According to these studies, a marked reduction in physical activity during the COVID-19 pandemic was noticed. Meanwhile, the adherence to alternative training programs, the increased levels of pain, anxiety and depression also had negative impacts. **Conclusion:** Physical activity is an important ally in maintaining the health of people with fibromyalgia. However, the COVID-19 pandemic has caused a great reduction in these activities, which has contributed to the decline in the general state of health of these people.

Keywords: Fibromyalgia; Physical exercise; Health; COVID-19

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RESUMO

Introdução: A fibromialgia caracteriza-se por uma dor musculoesquelética crônica e generalizada. Dentre os tratamentos conhecidos, destaca-se a prática regular de atividade física. O contexto pandêmico, contudo, instituiu uma série de mudanças, repercutindo na realização dessas atividades e na saúde das pessoas acometidas pela doença. **Objetivo:** Descrever as repercussões causadas pela pandemia de COVID-19 na prática de atividade física e na saúde de pessoas com fibromialgia, por intermédio da análise dos estudos que relacionam tais aspectos. **Métodos:** Realizou-se uma revisão de escopo, nas bases Biblioteca Nacional de Medicina dos Estados Unidos (PubMed), Literatura Latino-Americana e do Caribe em Ciências da Saúde (Lilacs), Sistema Online de Busca e Análise de Literatura Médica (Medline) e Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). Foram incluídos artigos com dados primários que abordassem as implicações da pandemia na prática de atividade física e saúde de pessoas com fibromialgia, entre 2020 e 2023, nos idiomas: inglês, espanhol ou português. **Resultados:** Foram selecionados 12 estudos com o total de 3.403 participantes. Foi verificada a redução acentuada da prática de atividade física durante a pandemia de COVID-19, a adesão a programas alternativos de treinamento, e aumento dos níveis de dor, ansiedade e depressão. **Conclusão:** A prática de atividade física é uma importante aliada para a manutenção da saúde de pessoas com fibromialgia. Contudo, a pandemia de COVID-19 causou uma redução significativa dessas atividades, o que contribuiu para a queda do estado geral de saúde dessas pessoas.

Palavras-chave: Fibromialgia; Exercício físico; Saúde; COVID-19

INTRODUCTION

Fibromyalgia is characterized by chronic, widespread musculoskeletal pain associated with neuropsychological symptoms, such as fatigue, cognitive and sleep disorders, and mood disorders, such as depression and anxiety, as well as a propensity to other pain and fatigue-related syndromes[1-3]. The condition affects people of any age group, ethnicity, gender and socioeconomic status, but predominates in women, between the ages of 25 and 65, with a prevalence of 2.0 to 2.5% in Brazil, and may have important repercussions in the quality of life and on the performance of daily activities, such as work, although, at large, it is not a disabling disease in itself[1,2,4].

It occurs as a result of central sensitization to pain, so that neuronal hyperexcitability leads to stimulus amplification, and the central nervous system is responsible for its maintenance, which can be triggered and/or aggravated by many physical and emotional stressors, as well as their associated symptoms[1]. Treatment involves both non-pharmacological and pharmacological components. Among the non-pharmacological measures is the regular and long-term practice of physical exercise, especially moderate aerobic exercise, which, due to the increase in serotonin levels, an increase in GH-IGF1, regulation of the hypothalamic-pituitary-adrenal axis and the autonomic nervous system, contributes to the control of pain, depression, anxiety, sleep and fatigue[1,2,5,6].

The COVID-19 pandemic caused repercussions on the lives of people of different age groups. In this sense, the importance of physical exercise for the general population has been reinforced in order to maintain both the physical and mental dimensions of heath care[3,7]. The pandemic context, however, has kept many individuals away from this practice, which led to a decrease in physical activity and outcomes related to worsening quality of life, especially for people whose inactivity can be a fundamental factor for disability, such as in cases of chronic pain[5,8,9].

Even so, there is a gap in the grouping of studies that expose how the isolation caused by COVID-19 has impacted the practice of physical activity, quality of life, perception of pain, degree of capacity and overall health of people with fibromyalgia, justifying the need for this article. In this perspective, this scoping review was conducted for the purpose of describing the repercussions caused by the COVID-19 pandemic on the practice of physical activity and the health of people with fibromyalgia, through the analysis of studies that relate these aspects.

Methods

This is a scoping review, a methodology that aims to synthesize evidence and assess the scope of the literature on a research topic, as well as possible existing gaps. The study was conducted using the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) protocol and includes the following topics recommended by the manual: title, structured abstract, rationale, objectives, protocol and registration, eligibility criteria, sources of information, search, selection of sources of evidence, data extraction model, data items, synthesis of results, limitations and conclusions[10].

The review was registered in the Open Science Framework with DOI 10.17605/OSF.E/S9BJQ. It was guided by the acronym PCC (Population, Concept, Context) and the following research question: "What are the repercussions of the COVID-19 pandemic on the practice of physical activity and the health of people with fibromyalgia?" (Table 1).

Table 1. Relationship between mnemonics and their respective correspondents in this study.

Mnemonic	Correspondent
P: population	People with fibromyalgia
C: concept	Repercussions on physical activity and health
C: context	COVID-19

Source: Elaborated by authors (2023).

A highly methodological search was conducted to select the studies on April 3, 2023, using the Medical Subject Headings (MeSH) and Health Sciences Descriptors (DeCS): "Fibromyalgia", "Physical Exercise", "Health" and "COVID-19", combined with the boolean operator AND (between descriptors) and OR (between synonyms). The strategy was used in the following databases: US National Library of Medicine (Pubmed), Latin American and Caribbean Health Sciences Literature (Lilacs), Online Medical Literature Search and Analysis System (Medline) and Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES). To ensure the scientific criterion of reproducibility, the search strategy was summarized in Table 2:

The results obtained from the databases were exported to the Rayyan® reference manager. This stage was conducted blindly by two independent academic evaluators (LSC and ISR) from the health area, who resolved any discrepancies by consensus. The inclusion criteria applied were: publications on the pandemic implications on the practice of physical activity and the health of people with fibromyalgia, between 2020 and 2023, in English, Spanish or Portuguese. Regarding the type of study, primary, quantitative and qualitative research of any design or methodology was considered. Letters to the editor, reviews, abstracts in event proceedings, incomplete articles, non-free articles, studies in the design phase or without results were excluded.

The data was extracted independently by two reviewers (DLAA and LRM) and organized into structured forms using Microsoft Excel® software. To ensure better accuracy at this stage, the process was confirmed by a third reviewer (LSC) and any discrepancies were resolved by consensus. This phase was conducted using the Joanna Briggs Institute (JBI) instrument, and included in the extraction table: authorship, reference, country, year of publication, objective, study design, sample number and main results[10].

The process of interpretation and synthesis was based on Bardin's Content Analysis technique, which is articulated in three main pillars (pre-analysis, exploration of the material and treatment of the results) and emphasizes the sensitivity of the stages based on the following topics: completeness, representativeness, homogeneity and pertinence; with categorization and grouping of the contents identified[11]. Subsequently, this information was synthesized and inserted into Table 3.

Results

In the identification stage, a total of 178 articles was found (n = 178; Medline= 06; Lilacs= 03; PubMed=59; Capes=110). In the selection stage, 30 articles were excluded for being duplicates, 08 for being reviews, 29 for being incomplete and 70 for not meeting the objective of this study. In the eligibility stage, the remaining 41 titles were read in full and 29 were excluded for not relating to COVID-19, physical activity, health and fibromyalgia, leaving twelve articles. In the inclusion stage, the 12 selected articles were included and tabulated (Figure 1).

This review consists of 08 observational studies (05 cross-sectional, 01 qualitative, 01 longitudinal and 01 prospective) and 04 experimental studies (03 randomized clinical trials and 01 prospective). The total sample analyzed consisted of 3,403 participants, 2,963 women and 440 men diagnosed with fibromyalgia. The geographical distribution of the countries where the studies were conducted included Brazil (n= 03), Spain (n= 05), France (n= 01), India (n= 01), Israel (n= 01) and Turkey (n= 01). The main results are summarized in Table 3.

As a result of COVID-19, 41.67% (n=05) of the articles showed that there was an interruption or reduction in the practice of physical activity due to the blocking of training centers, as well as public spaces, harming or interrupting the patient's daily physical exercise[12,17,18,21,22]. Three articles reported that virtual activities, such as Fibrowalk (01 article) and telerehabilitation (02 articles), were useful in maintaining the daily exercise routine[13,20,23].

Table 2. PCC strategy.

Objective:	**What repercussions has the COVID-19 pandemic had on the physical activity and health of people with fibromyalgia?**		
	Population	**Concept**	**Context**
Extraction	People with fibromyalgia	Repercussions on physical activity and health	COVID-19 pandemic
Conversion	Fibromyalgia	Physical Exercise; Health	COVID-19
Combination	*Fibromyalgia; Fibromyalgia*	*Physical Exercise; Exercise; Ejercicio Físico; Health; Salud*	COVID-19
Construction	(Fibromyalgia* **OR** Fibromyalgia*)	("Physical Exercise" **OR** Exercise* **OR** "Ejercicio Físico" **AND** Health* **OR** Health* OR Salud*)	(COVID-19*)
Use	(Fibromyalgia* OR Fibromyalgia*) AND ("Physical Exercise" OR Exercise* OR "Ejercicio Físico" AND Health* OR Health* OR Salud*) AND (COVID-19*)		

Source: Elaborated by authors (2023).

The article approaching Fibrowalk reported that the activity included education in the neuroscience of pain, therapeutic exercises, cognitive behavioral therapy and mindfulness training for over 12 weeks and followed by a weekly 60-minute video[23]. The other two articles addressed telerehabilitation and their interventions[13,20]. One of these applied stretching exercises supervised by telemedicine for twelve weeks, using guiding videos to help the participants to exercise[13]. The other one evaluated the effects of a telerehabilitation program based on aerobic exercises, which was also guided by video, with the intensity of each session monitored for 15 weeks with 2 weekly sessions[20].

Five studies (41.67%) showed that physical activity, especially outdoors, is an effective non-pharmacological treatment option due to its positive effects on improving social interaction and general symptoms of fibromyalgia[11,15,17,20,21]. Fifty percent (n = 6) of the articles stated that participants sought to readapt in the new scenario, during the Covid-19 pandemic, doing activities at home including aerobic and strength training[13,16,19,22,23].

One study (8.33%) analyzed the personal perception of people's ability to perform physical exercise, and it was found that the feeling of being able to perform the proposed physical activity results in a perception of the exercise as less intense[14]. Furthermore, different intensity levels of physical exercise were perceived in diverse ways. In the same walk, some participants described it as light, but others considered it intense[4].

The symptoms associated with fibromyalgia and the social isolation caused by the pandemic are described in all the articles and included depression, fatigue, sleep disorders, anxiety and pain. In one article (8.33%), the first four symptoms mentioned were assessed using the symptoms severity scale, with the result of an average score of 08/12, which classifies them as moderate intensity and high frequency[21]. Six studies (50%) used the visual analogue scale to measure pain levels among participants, with responses equal to or greater than 07/10, which categorized the perceived pain among participants as moderate to severe[12,13,17,20-22]. On the other hand, 50% (n=06) of the articles showed that adequate physical activity can have a positive effect on sleep quality and, consequently, improve psychological and physiological symptoms, which reflects on the maintenance of quality of life and good performance of basic daily activities[13,14,16,18-20].

Almost all of the intervention studies that have evaluated the effects of physical activity during the pandemic have shown improvements in fibromyalgia symptoms[12-16,20,22,23]. Among these studies, three followed specific protocols, including advising on stretching through exercise guides and videos for home training, moderate-intensity aerobic telerehabilitation exercises, multicomponent strategies based on therapeutic exercises, education for neuroscience pain and mindfulness training[13,20,23].

Only one article mentioned that the symptoms of fibromyalgia eased even in the absence of physical exercise, suggesting that the reduced activity during the pandemic resulted in less fatigue and, consequently, less reported symptoms[18]. This finding may be attributable to the small sample size or the importance of rest for these individuals.

Besides, 58.33% (n=07) of the studies reported that the pandemic interfered with the research method and the analysis of the results[12,13,16,17,19-21]. From this perspective, interviews were carried out under non-standardized conditions, with a high number of dropouts among the selected samples[13]. Moreover, in one of the papers, during the course of the intervention there was a difference in the way the data was assessed and reassessed followed by the change from face-to-face to virtual modality, and this last stage was not done under the same methodological standards[17]. Furthermore, 33.33% (n=04) of the articles pointed out that the small sample size made it difficult to obtain sub-analysis by gender, age group and other variables[13,19,20].

Table 3. Systematization of the data found in the studies.

Autor e ano	Type of study and country	Programs and/ or instruments applied	Samples	Main results
Martins et al. (2021)[12]	**Cross-sectional study Brazil**	**Sociodemographic and clinical questionnaire FIQ EVA**	1099 women and 57 men Age ≥ 18 years	Almost 40% of those who practiced regular exercise dropped out and reported worsening social isolation, as well as negative psychological repercussions.
Costa et al. (2023)[13]	**Randomized clinical trial Brazil**	**Stretching exercise program via telehealth in 12 weekss PSQI WPI EVA**	28 women Ages between 30 and 60	Depressive symptoms improved post-intervention with stretching exercises.
Guitiérrez et al. (2023)[14]	**Prospective study Spain**	**Sociodemographic and clinical questionnaire, walking monitoring with accelerometer and self-reports - SEPAS - IPAQ-s - BPI - HADS**	132 women Ages between 32 and 79	Adherence to walking was a positive intervention for the rehabilitation of fibromyalgia patients affected by the pandemic.
Hinchado et al. (2022)[15]	**Cross-sectional study Spain**	**Questionnaire about the practice of physical activities in the last 3 months - BDI - PSS -STAI - BPI - BFI - HLPCQ - FIQ - CAS - FCV-19S**	70 women Ages between 40 and 65	**Regular physical exercise** had a positive effect on the psychological state and quality of life of fibromyalgia patients.
Colas et al. (2021)[16] **2021**	**Qualitative study France**	**Semi-structured interview**	16 women and 03 men Ages between 38 and 70	Confinement exacerbated the main symptoms of fibromyalgia. As a result, 68% of patients found alternatives to keep physically active.
Melo et al. (2022)[17]	**Longitudinal study**	**Sociodemographic and clinical questionnaire - IBA - BDI - EVA - HAQ**	15 women Ages between 43 and 55	**60% of the participants** had stopped **exercising** due to the pandemic. At the same time, they reported higher levels of anxiety and pain.

Saxena et al. (2022)[18]	**Cross-sectional study India**	**Sociodemographic and clinical questionnaire - FIQR - WPI - SSS**	59 women and 19 men Ages between 20 and 60	Physiotherapy treatment has been impaired due to the pandemic. A subjective worsening of psychological state was described in the study population.
Gomez-Arguelle et al. (2022)[19]	**Prospective study Spain**	**Self-recording of signs and symptoms related to fibromyalgia for 06 months**	117 women and 07 men Ages between 19 and 78	**75% of the participants** reported at least one flare-up of fibromyalgia pain associated with ongoing stress. Of these, 18% took the action of exercising after these flare-ups.
Hernando-Garijo et al. (2021)[20]	**Randomized clinical trial Spain**	**Randomized clinical trial Spain - EVA - FIQR - PCS - HADS ACT**	37 women Ages between 30 and 75	Regular exercise has shown positive repercussions on the levels of neurotransmitters, neuromodulators and hypothalamic-pituitary function.
Aloush et al. (2021)[21]	**Cross-sectional study Israel**	**Sociodemographic and clinical questionnaire - WPI - SSS - ISI - EVA**	211 women, 20 men Ages between 17 and 60	**Among the people studied,** 57% had stopped exercising. 45.5% said they had a history of anxiety and depression.
Bagcier et al. (2022)[22]	**Cross-sectional study Turkey**	**Sociodemographic and clinical questionnaire - PSS - FIQ - EVA**	1,028 women and 332 men Ages between 18 and 65	31% **of** participants remained active during the pandemic. **Among them**, 36% reported a decline in their general state of health during the period.
Serrat et al. (2021)[23]	**Randomized clinical trial Spain**	**Fibrowalk program for 12 weeks and sociodemographic and clinical questionnaire - FIQR - TSK - HADS - SF-PF**	151 women Ages between 22 and 76	Aerobic exercise showed positive effects in reducing pain, functional impairment and psychological distress. 12.49% of the participants **reported** suffering of anxiety and 11.80% depression.

Legend: VAS: Visual Analog Scale; FIQ: Fibromyalgia Impact Questionnaire; SEPAS: Self-efficacy Scale for Physical Activity Scale for Chronic Pain; IPAQ-s: International Physical Questionnaire; BPI: Brief Pain Inventory; HADS: Hospital Anxiety and Depression Scale; BDI: Beck Depression Inventory; PSS: Perceived Stress Scale; STAI: State-Trait Anxiety Inventory; BFI: Brief Fatigue Inventory; PSQI: Pittsburgh Sleep Quality Index; HLPCQ: Healthy Lifestyle and Personal Control Questionnaire; CAS: Coronavirus Anxiety Scale; FCV-19S: Fear of COVID-19 Scale. IBA: Beck Anxiety Inventory; HAQ: Health Assessment Questionnaire; FIQR: Fibromyalgia Impact Questionnaire-Revised; PCS: Pain Catastrophizing Scale; ACT: Arm Curl Test; WPI: Widespread Pain Index; SSS: Symptoms severity scale; ISI: Insomnia Severity Index; TSK: Tampa Scale for Kinesiophobia; SF-PF: Short Form Survey. **Source:** Elaborated by authors (2023).

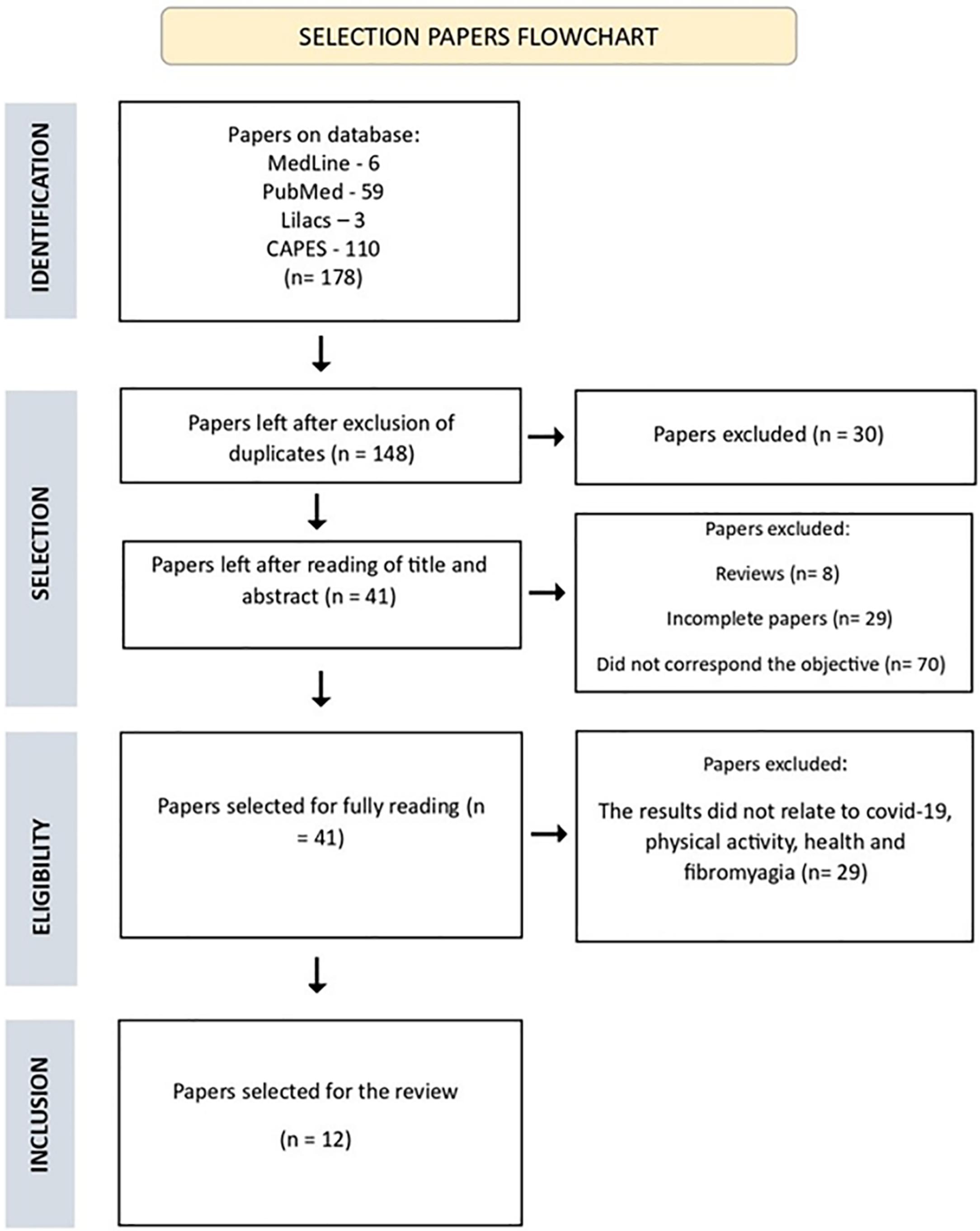

Figure 1. Flowchart of study selection. Source: Elaborated by authors (2023).

Discussion

This study was able to demonstrate that practicing physical activities has benefits and positive effects over fibromyalgia. Yoga, walking, workout and stretching were the ones with higher frequency. This confirms that lifestyle changes are important for reducing risk factors or worsening symptoms related to chronic diseases such as fibromyalgia[24]. However, after COVID-19 and the isolation measures, there was a considerable reduction in physical activity, which resulted in increased levels of anxiety, depression, pain, fatigue and sleep disturbances among the participants.

After COVID-19, almost half of the articles analyzed pointed out that there was a reduction in the practice of physical activity front the need for training centers to remain closed, as well as public spaces, harming or interrupting the practice of physical activities[12,17,18,21]. People with fibromyalgia have lower adherence to exercise under normal circumstances, since the practice is directly related to the emotional and psychological state[12]. The pandemic has increased this challenge, as shows one of the studies, in which almost half of the subjects quitted the regular exercises program[12].

There is an indication that the daily practice of physical activities favors social interaction, especially when done outdoors, and is a vital factor in this analysis, since people with fibromyalgia has an inclination to social isolation[12,17,18,21,22]. With the closure of gyms, sports clubs and public spaces, several participants reported a worsening of their physical and psychological health condition during the pandemic[22]. These data reaffirm the benefit of physical activity among people with chronic pain and how the absence of this practice, on the whole, reduces the quality of life of these individuals[20].

The prevalence of fibromyalgia in Brazil is 02%, with a sex ratio of one male to 5.5 females[25]. Aligned with this epidemiological information, women were the majority of the participants included in this review. As they represent the largest number of cases, the females tend to experience more acute impacts of fibromyalgia[23]. Also, the occurrence of menstrual syndrome and sexual dysfunction are factors that limit, respectively, the practice of physical activities and women's social interaction and are frequently described in the literature[23,25,26]. These tendencies, added to the social restrictions caused by COVID-19, can be related to the intensification of isolation and, consequently, to the decline in health seen among most of the participants in this study.

Over the papers analyzed, the majority are international and originated from Spain[14-16,18-23]. This fact should be highlighted because of the cultural, demographic and, above all, structural differences that directly influenced the measures taken by each country during COVID-19 and, consequently, the general panorama exposed on the practice of physical activities and the health of people with fibromyalgia during this period. The Spanish health system, for example, has gone and is undergoing changes in its management since 2010 due to the intensification of migratory waves, a fact that makes it difficult to delineate a solid population profile and adds complexity to intervention strategies for diseases that affect the population, such as fibromyalgia[27].

As this is a secondary study, the limitations of the articles included may be reflected on the results. For instance, there is evidence that the pandemic interfered with the research method and the results analysis, since some interviews were carried out in non-standardized conditions, with a large reduction and dropout among the selected samples. In addition, during the course of the research, changes were made to the way the stages were conducted, alternating between face-to-face and virtual modalities, factors which had an impact on the final product of these articles. Besides, the inclusion criteria relating to languages may have restricted the scope of this review.

Conclusion

This study was able to map some repercussions caused by the COVID-19 pandemic on the practice of physical activity and on the health of patients with fibromyalgia. There is no doubt physical activity is an important ally in maintaining the health of people with fibromyalgia, however, the pandemic had a significant role in the great reduction in these activities, which has contributed to the decline of the general state of health of these people.

Finally, there is an urgent need for more in-depth studies on this topic, and it is essential to implement new studies with a larger number of participants and more standardized approaches, which consider a broader geographical analysis and discuss the effects on the practice of physical activity caused by the COVID-19 pandemic over the health of people with fibromyalgia in a reliable period of time.

Author's Contributions

We describe contributions to the papers using the taxonomy (CRediT) provide above:

Proposed the developed topic, conducted the literature review, and contributed to the writing and the preparation of the definitive version of the article: CLSC; *Participated in the literature review, writing, and preparation of the final version of the article:* RIS; *Contributed to the synthesis of results, writing, and preparation of the definitive version of the article:* ADLA. *Contributed to the synthesis of results, writing, and preparation of the definitive version of the article:* MLR. *Participated in the theoretical discussion, writing, and preparation of the final version of the article:* AFM. *Contributed to the theoretical discussion, the writing, and the preparation of the definitive version of the article:* AKO; *Contributed to the writing and preparation of the definitive version of the article:* LGGC; *Participated in the writing and preparation of the final version of the article:* SLS; *Contributed to the writing and preparation of the definitive version of the article:* SACS. *Contributed to the writing and revision of the article:* BGF. *All authors discussed, read, and approved of the definitive version of the chapter.*

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