Prevention and rehabilitation of low back pain in nursing workers: an integrative literature review

Prevenção e reabilitação da dor lombar em trabalhadores de enfermagem: revisão integrativa da literatura

Prevención y rehabilitación del dolor lumbar en trabajadores de enfermería: revisión integral de la literatura

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Abstract: **Objective**: to identify strategies for the prevention and rehabilitation of low back pain in nursing workers. **Method**: integrative literature review. LILACS, MEDLINE PUBMED and SCIELO databases were searched, for articles published in English, Spanish and Portuguese from 2009 to 2019. **Results**: Three categories emerged from the 14 selected articles: "prevention strategies", "complementary rehabilitation strategies", and "combined strategies". Prevention consisted mainly of online education and strategies based on the Health Belief Model. The complementary strategies found were massage, myofascial release and yoga. Combined strategies such as the Spine School seem to provide a more adequate model for the management of non-specific lower back pain. **Conclusion**: Due to the scarce number of publications on the subject, further studies should be conducted to obtain more accurate evidence on the efficacy of these strategies, as well as the use of new approaches, particularly multimodal, in this specific population in its work environment.
Descriptors: Low Back Pain; Occupation Health Nursing; Exercise Therapy; Rehabilitation, Disease Prevention

Resumo: **Objetivo**: identificar estratégias de prevenção e reabilitação da dor lombar em trabalhadores de enfermagem. **Método**: revisão integrativa de literatura. As buscas aconteceram nas bases de dados LILACS, MEDLINE/PUBMED e na biblioteca eletrônica SCIELO com artigos em inglês, espanhol ou português de 2009 a 2019. **Resultados**: resultaram 14 publicações e a construção de três categorias: "estratégias de prevenção", "estratégias reabilitativas complementares" e "estratégias combinadas". A prevenção envolveu a educação online e a baseada em Modelo de Crenças em Saúde, as estratégias complementares foram representadas pela massagem,

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liberação miofascial e yoga. As estratégias combinadas como a Escola de Coluna parecem fornecer um modelo mais adequado para o manejo da dor lombar não específica. **Conclusão**: o número escasso de publicações acerca do tema sugere novos estudos para se obterem melhores evidências da eficácia dessas estratégias e também a utilização de novas abordagens, principalmente, multimodais nessa população específica no ambiente laboral.
Descritores: Dor Lombar; Enfermagem do Trabalho; Terapia por Exercício; Reabilitação; Prevenção de Doenças

Resumen: Objetivo: identificar estrategias de prevención y rehabilitación del dolor lumbar en trabajadores de enfermería. **Método**: revisión integral de literatura. Las búsquedas ocurrieron en bases de datos LILACS, MEDLINE/PUBMED y biblioteca electrónica SCIELO en artículos en inglés, español o portugués de 2009 a 2019. **Resultados**: resultaron 14 publicaciones y tres categorías: "estrategias de prevención", "estrategias de rehabilitación complementarias" y "estrategias combinadas". La prevención abarcó educación online así como la basada en Modelo de Crencias en Salud, en cambio, las estrategias complementarias se representaron por masaje, liberación miofascial e yoga. Se cree que las estrategias combinadas como la Escuela de Columna fornecen un modelo más adecuado para el manejo del dolor lumbar no específico. **Conclusión**: el número escaso de publicaciones acerca del tema demanda nuevos estudios para mejores evidencias de la eficacia de esas estrategias, así como utilización de nuevos abordajes, principalmente multimodales en la población específica del ambiente laboral.
Descritores: Dolor de la Región Lumbar; Enfermería del Trabajo; Terapia por Ejercicio; Rehabilitación, Prevención de Enfermedades.

Introduction

Low back pain can be defined as pain localized below the costal margin and above the lower gluteal folds, with or without pain in the lower limbs. The most prevalent is non-specific low back pain and is the result of poor posture or inadequate body movements, as well as working conditions, where there is imbalance between functional load and the ability for performing routine activities.[1]

Globally, it is the most common reason for medical consultations and the leading cause of disability involving physical, psychological and social factors. Its prevalence is increasing particularly in low and middle-income countries.[2] The costs associated with healthcare and attributed to disability for work are extremely high and vary among the countries. Since low back pain is a public health problem, strategies should be devised for its management, in order to prevent future problems.[2]

The condition is frequent among nursing professionals, with a prevalence of 35 to 80%.[3-4] Chronic low back pain can occur in 40% of the cases.[5] The incidence is twice as high among nursing

workers compared to other professions.[6] As low back pain is prevalent, expensive and disabling, interventions for prevention and treatment, avoiding the worsening or perpetuation of symptoms are justified. Controlling this situation can lessen negative social and economic impacts.[7] Since pain can have multiple causes, its management requires alternative methods.[8] The treatments most commonly used for low back pain include, but are not limited to, exercises, manual therapy, massage, yoga, surface heat, counseling, preventive education, self-management of pain, acupuncture and cognitive behavioral therapy.[9] All the aforementioned proposals are non-drug and non-invasive therapies for the management of non-specific low back pain and comprise prevention and rehabilitation strategies.

Nursing lacks scientific evidence on methods of prevention and rehabilitation of low back pain, as well as knowledge on the most appropriate techniques and on the consensus on their implementation. Then, the following question was posed: what strategies for the prevention and rehabilitation of low back pain have been applied to nursing workers? Thus, the present study aims to identify strategies for the prevention and rehabilitation of low back pain in nursing workers.

Method

Integrative Literature Review based on the assumptions of Ganong, an author that uses systematization of methodological stages.[10] The review protocol was validated by an expert. The guiding question was then asked: what strategies for the prevention and rehabilitation of low back pain have been applied to nursing workers? This questioning was guided by the PICO strategy, which also assisted in the search for the best available scientific information. Its components were broken down into P (Patient= *Low Back Pain in Nursing*), I (Intervention= Exercise Therapy or Multidisciplinary or Educational Activity and O (Outcomes= Effectiveness).

The element C (comparison between intervention or group) was not used due to the type of review conducted.

Inclusion criteria were articles indexed in databases from 2009-2019 that specifically addressed prevention and/or rehabilitation of acute or chronic non-specific low back pain in nursing workers, available in Portuguese, English or Spanish. Theses, dissertations, studies published in annals of events, editorials, articles not available in full text and populations composed of nursing students were excluded. Regarding the period of publication (2009-2019), it was selected because worker health and the prevalence of musculoskeletal disorders, more specifically low back pain, have been the subject of extensive debate in the referred period. The condition has been the most frequent among individuals granted sickness benefits under the National Social Security Institute (INSS) in the last ten years. Thus, low back pain is responsible for high rates of disabilities and absences from work, entailing a high cost for the society and health systems.[8]

Searches were electronically performed through the databases Latin American and Caribbean Literature (LILACS), Scientific Electronic Library Online (SCIELO), Physiotherapy Evidence Database (PEDro) and Medical Literature Analysis and Retrieval System Online (MEDLINE) via PUBMED, covering articles available in full text. The search strategy involved the combination of terms registered in the Health Sciences Descriptors (DeCS) and in the Medical Subject Headings (MeSH) (Chart 1).

Chart 1 – Search strategies, Florianópolis, Santa Catarina, Brazil, 2019.

SCIELO	*(Low Back Pain OR Lower Pain) AND ("Occupational Health Nursing OR Nursing OR Nurse)*
MEDLINE/ PUBMED	*(("Low Back Pain" OR "Lower Back" OR "Lumbar Region" OR "Lumbago")) AND ("Occupational Health Nursing " OR "Nursing" OR "Nurses"))* *Filters activated: Clinical Trial, Review, publication date from 2009/01/01 to 2019/10/31, Humans*
LILACS	*Estratégia PICO* *Patient/Problem: Low Back Pain in Nursing* *Intervention: Exercise Therapy /Multidisciplinary/ Educational Activity* *Outcome: Effectiveness*
	(tw:("Dor lombar" OR "Lombalgia" OR "Dorso" OR "Costas")) AND (tw:(Enfermagem do Trabalho OR Enfermagem OR "Trabalhador")) AND (db:("LILACS")) AND (year_cluster:[2009 TO 2019])
PEDro	*"Low Back Pain"OR"Nursing"*

The search and selection of articles was conducted by two independent reviewers who later compared their findings. Disagreements were resolved by a third reviewer. The references of all articles were searched to identify additional studies. The search flowchart is in Figure 1.

Figure 1- Flowchart of the process of selection of studies, Florianópolis, SC, Brazil, 2019
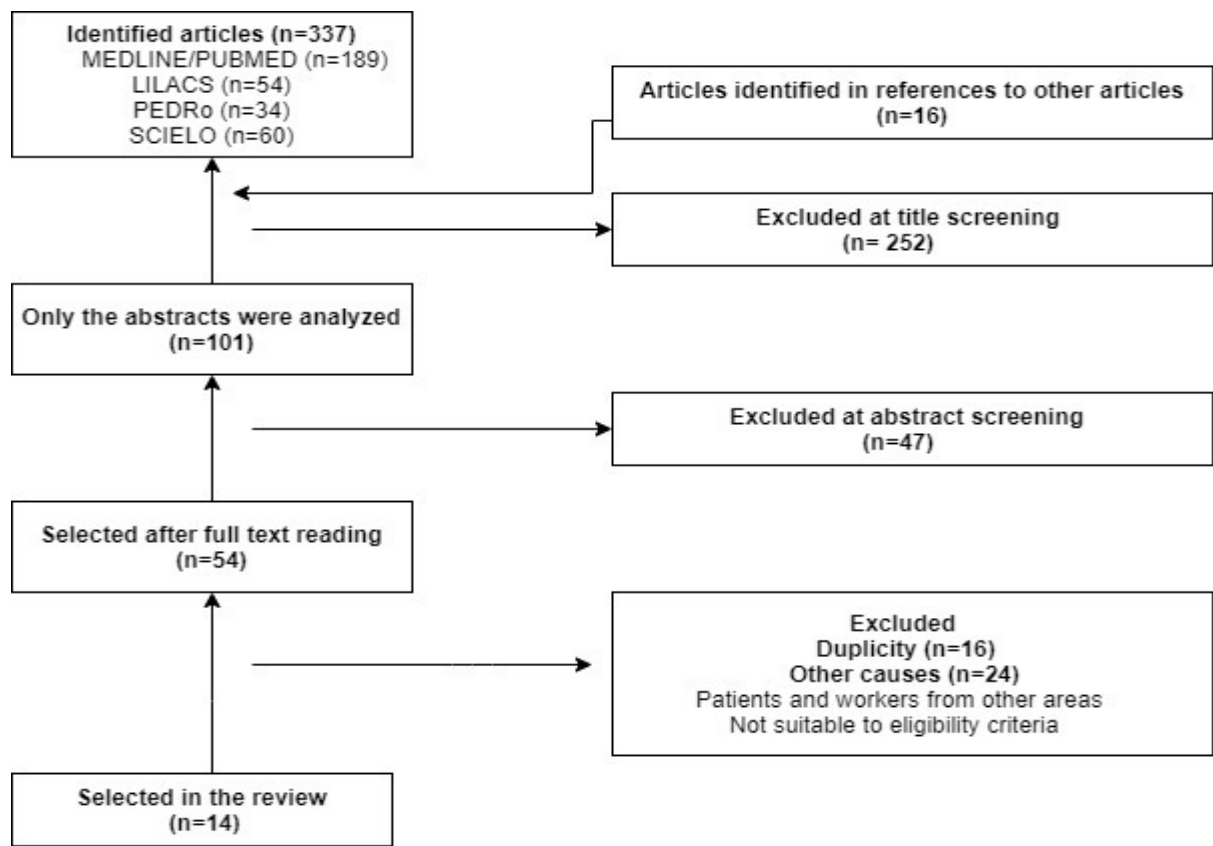
Regarding the level of evidence, the publications were classified based on the hierarchy proposal of Evidence-Based practice defined by Melnyk and Fineout-Overholt. In this approach, studies are classified according to the design as quantitative and qualitative research: level I - systematic review or meta-analysis of controlled and randomized studies; level II - experimental study; level III - quasi-experimental study; level IV - descriptive/non-experimental study or with a qualitative approach; level V - case report or experience; level VI - consensus and expert opinion.[11]

The articles were cataloged in forms for subsequent data extraction, interpretation and analysis, including description of the title, authors, country, language, type of study, year of publication, objectives, methods, results and conclusions. The steps proposed by Content Analysis[12] were used in this study, as follows: pre-analysis with the systematization of the initial ideas after reading the selected articles; exploration of the material with the respective selection

of relevant information and level of data aggregation, and the processing of the results, inference and interpretation with the creation of the guiding categories.

Results

Fourteen (14) articles were included in this review (n = 1397) and classified into three categories: "prevention strategies" (Chart 2), "complementary rehabilitation strategies" (Chart 3) and "combined strategies" (Chart 4), with description in the tables of the intervention, number of participants, results and level of evidence.

Chart 2 - Selection of articles on prevention strategies, the intervention used, number of participants, main results and Level of Evidence (LE), Florianópolis, SC, Brazil, 2019

Source/Country /year	Intervention /sample	Results	NE
Tung et al/ Taiwan/2014.[13]	Online education/320	Knowledge about the prevention of occupational risks differed significantly (p <0.05). However, attitudes and practices were not modified.	III
Sharafkhani et al/Iran/2015.[3]	Educational program/100	The average scores of knowledge and the Health Belief Model (HBM) constructs for the adoption of preventive behaviors increased significantly in the intervention group (p <0.0001).	III

Chart 3 - Selection of articles on complementary rehabilitation strategies, the intervention used, number of participants, main results and Level of Evidence (LE), Florianópolis, SC, Brazil, 2019

Source/Country /year	Intervention /sample	Results	NE
Borges et al/Brazil/2012.[14]	Massage/18	The numerical pain scale showed a statistically significant improvement between the 3rd and 1st assessments (p = 0.000) and between the 3rd and 2nd assessments (p = 0.004).	II
Borges; Kurebayashi; Silva/Brazil/ 2014.[15]	Massage/45	Massage obtained a very significant effect (d = 4.59) with Cohen test, corresponding to an 86% reduction in pain levels, changing them from moderate to mild pain.	III
Ajimsha; Daniel; Chithra/India/ 2014.[16]	Myofascial therapy /80	In the intervention group, pain decreased 53.3% and functional disability decreased from 29.7% to 26.1%, and 9.8% in the control group in the eighth week.	II
Patil et al./India/2018.[17]	Yoga/88	The yoga and control groups differed significantly in the following domains: physical (p <0.01), psychological (p <0.01) and social (p <0.01). There was no significant difference between the groups regarding the environmental domains (p = 0.249).	II

Chart 4 - Selection of articles on combined strategies, intervention used, number of participants, main results and Level of Evidence (LE), Florianópolis, SC, Brazil, 2019

Source/Country /year	Intervention /sample	Results	NE
Shojaei et al/Iran/ 2017.[18]	Multidisciplinary intervention /125	Pain decreased from 5.01 ± 1.97 to 3.42 ± 2.53 after 6 months on the visual analog scale in the intervention group (p <0.001). There was no significant difference in disability scores between the two groups (p = 0.07).	II
Jaromi et al./Hungary/ 2012.[19]	Back School/124	Pain decreased in both groups, but in the intervention group it improved at 6 and 12 months of follow-up (p <0.001).	II
Ewert et al./Germany/ 2009.[6]	Multimodal program/169	There was no statistically significant difference between the two groups in reducing the intensity of low back pain and improving overall health.	II
Chen et al./Taiwan/ 2014.[20]	Multimodal program/127	Stretching exercise program improved pain and self-efficacy in all follow-ups (p = 0.040, p = 0.011, p = 0.002) and 81% of the participants of the experimental group reported moderate to high level of low back pain relief.	II
Ghadyani et al., Iran/2016.[21]	Multidisciplinary program/136	Significant decreases were evident after 3 months in pain severity (p = 0.03) and disability (p = 0.003).	II
Van Hoof et al., Belgium/2018.[4]	Systematic review: multimodal and multidisciplinary program, back school	Four low-risk of bias studies concluded that there is currently no strong evidence of effectiveness for any intervention in the prevention or treatment of low back pain in nurses.	I
Jaromi et al./Hungary/2018[22]	Back school/137	The average score of low back pain intensity decreased from 49.3 to the post-intervention score of 7.5. The correct execution of vertical lifting techniques in the experimental group rose from 8.91% to 97.01% and horizontal elevation increased from 10.44% to 100%.	II
Pakbas et al./Iran/2019.[23]	Back school/64	Decreased functional capacity and low back pain scores (p <0.001) in the intervention group.	III

The interventions were heterogeneous and had different methodologies, different control groups, outcome measures and follow-up. Most studies resulted from international research, but all

had experimental [6,15-22] and quasi-experimental designs [3,13-14,23] of clinical trials, except for one systematic review; [4] mostly conducted in the workplace, generally hospitals, [3, 13-15,18,20-23] one clinic [16] and three universities. [6,19,22]

Discussion

Of the existing resources, mostly physiotherapeutic, few have been used in nursing professionals. There are scarce articles relating the theme to activities performed by nurses and, consequently, the evidence of interventions in the prevention and treatment of low back pain in nursing workers is weak.

In the category entitled "prevention strategies", potential risk factors in the workplace can be identified and serve as goals for preventive interventions. [6] The use of online education based on health behavior theories could be a viable solution. Access to classes using computers available in hospitals is facilitated, increases awareness and learning in the classroom. [13] The study revealed that the use of educational videos improved the perception of information, but did not lead to changes in attitudes and practices for risk prevention. According to the authors, this gap was caused by the lack of online discussion forums for workers to get information and find solutions to the problems detected. [13] It is assumed that, in addition to risk assessment, critical analysis is necessary.

Randomized double-blind clinical trial with other workers assessed an effect of an intervention in patients with low back pain based on online videos and found clinical improvements in quality of life in the intervention group compared to the control group. [24] Therefore, the use of this teaching resource could more easily spread knowledge, offer practical demonstrations and online discussions in the workplace through mutual interaction in the search for common solutions. However, further studies are needed to assess its effectiveness and adherence.

Another educational program based on a Health Belief Model was implemented, which proved effective in increasing the level of knowledge and judgments in health. It can be an alternative to traditional educational interventions.[3] The present study detected a deficit in the nurses' knowledge about low back pain prevention. Proper knowledge and positive attitudes favor the increase in preventive behavior rates. Therefore, the program could be implemented to promote behavioral changes.[3]

Understanding the beliefs can increase the effectiveness of low back pain management within the biopsychosocial care model. Positive beliefs favor the maintenance of the routine work, whereas negative beliefs induce fear and the option to reduce physical and social activities, predisposing to chronic pain and disability. Educational interventions can reduce fear, absenteeism at work, pain and early physical exhaustion.[25] Thus, some treatments focus on changing concepts and behaviors.[2]

An educational program can also encourage self-care, the way in which individuals manage symptoms, responsibility for pain control and action planning. A clinical trial that used an educational program based on the social cognitive theory to improve emotional coping strategies, showed significant changes in the intervention group in reducing pain intensity and no changes in the control group. This action could be implemented in hospitals to favor the adoption of preventive and healthy behaviors, in order to reduce pain, disability and absenteeism. The high prevalence of low back pain in nursing justifies studies with this intervention model to generate behavioral changes in the workplace.[18]

In the category called "complementary rehabilitation strategies", it was inferred that the only strategies researched in nursing were massage therapy [14-15], myofascial therapy[16] and yoga.[17] Therefore, massage is a viable alternative of intervention since the Cofen (Federal Nursing Council) has recognized the role of specialists in alternative health care practices.[14] Massage alone achieved

significant results with an 86% reduction in low back pain levels in nursing workers in an emergency room. Although it cannot be affirmed with absolute certainty that massage is more effective than other techniques, its use is promising as a complementary technique.[15]

A Guideline on clinical practices of the American College of Physicians based on systematic reviews until November 2016, classified massage when applied for acute or subacute low back pain as having low evidence. Since most patients with acute or subacute low back pain improve over time regardless of treatment, non-pharmacological treatment with superficial heat (moderate quality evidence), massage, acupuncture or spinal manipulation (low quality evidence) should be selected.[26] Some guidelines do not recommend passive therapies such as massage, or consider them optional, while others recommend its use by individuals who do not respond to the treatments adopted. [27]

Massage can be a solution for chronic low back pain, but further studies are needed to associate this practice with other forms of treatment such as education, exercises and self-management of pain. Massage is a therapy that can be implemented in hospitals. However, organizational planning is necessary.[14] Another aspect to be considered in the two selected studies [14-15] related to massage is the lack of follow-up to determine the long-term positive effects.

Myofascial release, used as an adjuvant therapy with specific exercises, can help reduce pain and disability in nursing professionals with chronic low back pain. Repetitive movements and reduced flexibility can cause repetitive microtrauma in the lower back, causing damage to soft tissues and lack of reorganization of the collagen fibers of the tissues. The treatment that restores the length of the myofascial tissue can interrupt the process of repetitive injury and regenerate the normal soft tissue architecture of the region. The analgesic effect of the technique can also stimulate afferent and efferent pathways and modulate pain.[16]

The study that examined the prevalence of myofascial dysfunction in individuals with low back pain, showed that 90% of them had this condition and advises that such dysfunction needs

specific treatment for pain management.[28] The study stresses that there were significant improvements in pain and functional disability with myofascial release compared to the control group and demonstrated that manual therapy and exercises have a significant impact on disability and fitness.[16] However, it should be emphasized that this strategy cannot be used alone, since pain management requires multidisciplinary interventions and the approach of psychosocial aspects.[27]

Yoga, a more global approach, which involves the psychosocial aspect in addition to physical rehabilitation, has shown promising results. Its effects improved the quality of life of nursing professionals with chronic low back pain in the domains of physical, psychological and social health compared to physical exercises. It is suggested that this holistic intervention be incorporated into the lifestyle of nursing professionals.[17] Yoga has a multifaceted approach with posture, breathing, meditation and relaxation techniques.[17] However, when the effectiveness of this strategy was determined in other populations with chronic low back pain, through comparison with conventional therapeutic exercises, improvement was similar in both groups.[29] A review of randomized controlled trials showed uncertainty about whether there is any difference between yoga and other exercises, or else, whether associated with exercises, yoga is more effective than exercise alone. Therefore, future in-depth studies on the subject are needed.[30]

In the category entitled "combined strategies", since low back pain has multiple factors and does not involve only physical factors, most clinical guidelines suggest multifaceted and multidisciplinary interventions for its prevention and rehabilitation.[26,31] Cognitive behavioral and combined therapies with physical and psychological resources are indicated for individuals with persistent low back pain. For the most disabled individuals, multidisciplinary rehabilitation programs with supervised exercises, cognitive behavioral therapy and medication are more effective than standard treatment. The use of the biopsychosocial model with emphasis on self-management

is recommended in physical and psychological therapies, some forms of complementary medicine, and not in pharmacological and surgical treatments. The focus should be on improving functionality.[27]

A combined strategy described is that of the Back School. It is a program that involves educational principles, exercises and assumes that increase in knowledge and the use of adequate body mechanics change behaviors and hence reduce risks.[19] The study demonstrated a significant reduction in pain intensity and improved body posture with this intervention compared to passive therapies like massage or physical resources like ultrasound.[19] On the other hand, a systematic review that also analyzed this study said there are reasons for caution because deficiency levels were not measured and it is difficult to compare it with passive therapies since these have few long-term benefits.[4] Therefore, any long-term intervention is probably better than passive physical therapy.

In addition to providing treatment, the "Back School" promotes awareness of more appropriate postural habits, impacts quality of life and psychosocial aspects. Its educational program focuses on anatomy, biomechanics, posture and ergonomics, exercise and self-management of pain.[22] A study recommended the Back School program as the gold standard program of choice in occupational health prevention and promotion policies.[19]

Based on the assumption that poor body mechanics increases the load of the lower spine and that the learning of correct patient movement techniques helps to decrease pain, the Back School program reduced low back pain in nurses and improved lifting techniques.[22] Based on the results of this study, the authors recommend that health institutions consider the implementation of regular spine care and lumbar injury prevention programs for nursing workers at regular intervals.[22] Likewise, the program reduced low back pain rates in the intervention group and the levels of functional disability measured by the Roland Morris

Disability Questionnaire. The authors also recommend the use of the program in the hospital setting.[23] Future studies shall be conducted to demonstrate the effects of the program.[32]

A multimodal intervention based on participatory ergonomics, physical training and cognitive behavioral training showed decrease in low back pain. This type of program favors primary prevention and rehabilitation, meets the need for several workers with or without pain and can bring more benefits to those with more severe pain. On the other hand, this intervention was not effective in improving work capacity and reducing absenteeism. This probably happened because these aspects require more specific interventions.[33]

The same multifaceted intervention model revealed that the program can reduce low back pain in workers in the workplace, but physical training showed moderate and limited evidence to reduce severity and new episodes of pain.[7] Another study that compared a multimodal program with physical exercises, psychological interventions, segmental stabilization exercises and workplace-specific ergonomics with a general exercise program among nurses with chronic low back pain, found small to moderate effects on both. There was no significant difference between the two groups and it was concluded that a multimodal program is not more effective than a general exercise program. Since the first program would be more expensive, its application is not justified.[6]

The clinical trial that examined the effectiveness of a stretching and self-efficacy exercise program on low back pain among Taiwanese nurses found satisfactory results in exercises that enable the individuals to initiate an exercise program or adhere to regular exercises in a specific situation. The exercises can be effective for nurses, increase the capacity for self-care and performance in the workplace.[20] They act as mediators between individual, environment and behavior and can be a good strategy to improve adherence to treatment.

A study with Iranian nurses also demonstrated, in its multidisciplinary educational program, that the participants' pain, disability and general efficiency regarding the ability to

overcome problems in the work environment improved after three months of intervention. The success of the intervention was attributed to continuous motivation, social support and the encouragement to overcome problems in the workplace, in order to face, through a preventive behavior, low back pain.[21] Another publication reinforces the importance of support and motivation in chronic low back pain. These incentives favor changes in attitudes, develop self-management skills to maintain activities of daily living and thereby improve physical performance and the perception of body health.[34] The authors attributed the success of their multidisciplinary program to the continued motivation for encouragement and stress management.[34]

Biopsychosocial rehabilitation models involve a combination of physical, psychological, educational and/or work-related components. They must be carefully considered regarding the cost-benefit ratio, as they are expensive, time-consuming and require multiple resources and, therefore, impact the health system. Some characteristics impact their effectiveness, such as the specific rehabilitation model used, the relative intensity of the individual component of the intervention, the skills and experiences of the health professionals who perform the intervention. Despite their high costs, these models can provide greater long-term benefits for patients with chronic low back pain compared to usual care or physical treatment alone. Future research is suggested to determine which populations with chronic low back pain would benefit most from these programs.[35]

The systematic review, which led to the selection of four publications, three of which are also included in the present study, evaluated the effectiveness of preventive approaches and treatment of low back pain in nursing, with a thorough and critical analysis. Few publications were found in the review, and it was concluded that there was no strong evidence on this topic. The authors suggest the exploration of the effectiveness of a patient-centered approach based on multidimensional clinical reasoning to address the underlying factors for low back pain. Or

else, focus should be given to pain-causing behaviors, from a multidimensional and multifactor perspective, rather than to the mere combination of several interventions.[4]

The review study that aimed to highlight effective, promising or emerging solutions for low back pain recommended pain assessment and management according to the guidelines. It is a biopsychosocial approach that includes education, self-management of pain, resumption of normal activities including work, exercises and psychological programs for individuals with persistent symptoms, as well as some types of complementary medicine. The study recommended caution in the use of medication, imaging tests and surgery. However, evidence-practice gap occurs worldwide due to several factors. These factors are related to the countries' socioeconomic level, income (low, medium and high), cultural acceptability, adherence and access to treatment, which can influence the results. [27]

Globally, promising and emerging solutions deserve more attention and more research. Improving educational quality and integrating health professionals could support the implementation of best practices, break barriers and develop a common language for creating innovative strategies for practice. One of these strategies is the integration of interventions between public health and work. Occupational actions should be taken in a timely manner, since return to work occurs before full recovery of symptoms. Public health education can change people's beliefs and behaviors with mass campaigns and the incorporation of different ways of disseminating information, such as social networks.[27]

Employers should also offer job options with some modifications to employees with low back pain. The idea is to reduce unnecessary health care, such as imaging exams, use of medications and surgery, favor the permanence in the workplace, avoid rest and lack of activities when pain occurs, and reshape clinical management, by combining practice and evidence. No single solution will be effective, and a collective, global effort takes time, determination and organization to implement solutions, reduce disability and lower back pain expenses.[27]

Conclusion

The present study provided knowledge on some strategies for the prevention and rehabilitation of low back pain. Treatment is not unique but envolves multiple interventions. The high rate of chronic low back pain indicates that it has not been satisfactorily handled and that there is lack of evidence to address the problem. Actions including pain control, self-management and preventive knowledge seem to provide better results.

It was also found that prevention and treatment are best administered by a multidisciplinary team. Treatments based on a single intervention may not produce the expected results, if the various causal links and the workplace context are not considered. A multidisciplinary team integrates different aspects to solve the same problem, with a broader and more adequate approach to prevention and treatment.

One limitation of this study was the scarce number of publications on the topic and the lack of research on other strategies and interventions that provide more detail on the intensity, duration and frequency of the treatment for reducing pain. The studies should also consider all factors involved in the genesis of low back pain, such as psychological factors, stress and depression. Therefore, it is concluded that there is still lack of evidence on the effectiveness of preventive and rehabilitating techniques for low back pain in nursing professionals. Further studies are needed to test complementary resources and therapies with potential for implementation as strategies in the public health system and to support the selection of approaches and the development of effective long-term protocols.

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