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Effectiveness of exercise of low back pain in nursing staff

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ABSTRACT

Low back pain (LBP) is a common occupational hazard among nurses that adversely affects their well-being and productivity. Exercise programs have gained widespread support as a non-pharmacological approach to treat LBP. The purpose of this study is to evaluate the effectiveness & efficacy of exercise programs in the treatment of low back pain (LBP) among nursing staff. A literature search was conducted in several databases, including the Cochrane Library, PubMed and CINAHL. All published studies on physical therapy for low back pain (LBP) in the nursing workforce from 2010 to 2023 were considered. Selected studies were carefully screened, and key findings were summarized. Overall, the data suggest the possibility of exercise interventions—such as aerobic exercises, strengthening, stretching, and stretching - Stabilization exercises—can reduce the incidence of acute low back pain (LBP), improve functional outcomes, and improve nurses' quality of life. Future research should include exercises -standardized training protocols, long-term follow-up, and comparative efficacy studies prioritize to determine the optimal exercise program for low back pain (LBP); is addressed in the nursing workforce.

Keywords: Lower back pain, Nurses, Exercise interventions, Spinal extension, Stretching exercise

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INTRODUCTION

Among all healthcare professions, nursing is the largest, making it the 5th most popular profession in the U.S (Budhrani-Shani et al., 2016). The high workloads and erratic shift patterns that nurses face often lead to musculoskeletal diseases (Caruso and Waters, 2008; Heiden et al., 2013). CLBP (Chronic low back pain), is the most prevalent musculoskeletal condition among nurses (Gropelli and Corle, 2011). This is a serious and developing health issue. Among nurses, the prevalence of LBP fluctuates from 45 to 77% throughout a one-year period (Alnaami et al., 2019; Davis and Kotowski, 2015). Physically demanding tasks including lifting and moving patients, as well as extended standing or stooped work, are commonplace for healthcare workers and are biomechanical risk factors for

low back pain (LBP) & chronic pain (Jensen et al., 2012; Nelson-Wong and Callaghan, 2010; Yassi and Lockhart, 2013).

The most often suggested treatment for NSLBP is exercise (Balagué et al., 2012; Falla and Hodges, 2017). However, compared to those for chronic LBP patients, there is fewer exercise therapies designed for sub-acute individuals. Moderately strong evidence suggests that exercise after therapy might lessen the likelihood that back pain will reoccur (Steffens et al., 2016), and leisure-time exercise can help avoid low back discomfort (Shiri and Falah-Hassani, 2017). Nevertheless, the outcomes of research on exercise treatment exhibit inconsistencies, making it challenging to determine the precise composition of a successful regimen (Choi et al., 2010).

Lumbar back pain (LBP) affects motor behaviour (Van Dieën et al., 2017) and is linked to postural and movement control issues. Patients with LBP have more difficulty controlling their low back movement, and female nurses with recent back injuries show more lumbar control impairments. However, it's unclear whether poor lumbar control causes LBP or a consequence.

It is thought that spinal control and stability (Panjabi, 2003) are crucial for maintaining good back health (Macedo et al., 2009). Various methods of exercise have been highlighted to attain spinal stability; yet, no one method has shown to be more effective (Cairns et al., 2006).

Breath training, a range of cognitive skills, and musculoskeletal training are all integrated into other complementary & integrative exercises like yoga, tai chi, & qigong (Wayne and Kaptchuk, 2008). According to a theory, complementary & integrative exercises' multimodality offers the special ability to target & influence a variety of physiological as well as psychological processes connected to chronic pain conditions, making them more advantageous than traditional unimodal therapies (Wayne and Fuerst, 2013). According to data from the National Health Interview Survey, Of the 8196 people who reported having low back pain in the preceding three months, mind-body exercises were deemed "very helpful" by 43% of respondents, making it one of the most prominent complementary therapies (13%) (Budhrani-Shani et al., 2016). The American College of Physicians & the American Pain Society jointly issued evidence-based therapeutic guidelines that indicated mind-body activities as therapies for CLBP with a moderate level of effectiveness (Eisenberg et al., 2012).

The purpose of this review is to address the prevalence of lower back pain, or CLBP, in nurses with an emphasis on physical activity. The article addresses the existing gaps in knowledge, the necessity for further research, and the effects of implementing integrative activities.

MATERIAL AND METHODS

This chapter provides a comprehensive summary of the literature on exercise therapies for nursing staff members with low back pain. It consists of approaches for searching, examining selection criteria, extracting and evaluating statistics, appealing assessment methodologies, and statistics synthesis. The focus of the examination is English studies that were published between 2010 and 2023. The PubMed, Web of Science, & ScienceDirect databases, as well as PubMed, CINAHL, and Cochrane Library, were used for electronic literature searches. A combination of controlled vocabulary and keywords relevant to LBP,

nursing staff, and exercise therapies was used. Exercise, yoga, mind-body, integrative, low back pain, nursing, risk factors, and biopsychosocial were the search phrases used. The study selection criteria for exercise interventions for LBP management in nursing cohorts were rigorous, focusing on randomized controlled trials, quasi-experimental studies, and systematic reviews, ensuring relevance and adherence to publication timelines. The number of the studies we included were cross-sectional, observational, epidemiological, and surveys that investigated the incidence & risk factors of low back pain in nursing personnel. Publications that were published in the last ten years were given special consideration. The screening process comprised two impartial reviewers who evaluated abstracts and titles to find pertinent papers. Disputes were settled by consultation or consensus. Full-text articles were retrieved and scrutinized against predefined criteria. Relevant data was extracted from included studies using a standard data extraction form. Quality assessment is crucial in the methodological framework, assessing the rigor and trustworthiness of studies. The study used a narrative approach for data synthesis, identifying key themes and patterns. Sensitivity analyses were used to assess methodological heterogeneity and bias risk. Additional strategies like hand-searching and grey literature exploration were employed. Ethical considerations were considered. The methodology ensured a rigorous, transparent approach, providing reliable insights for clinical practice and policy formulation.

RESULTS

Five hundred seventy-five articles were identified through different database search. For the following reasons, 570 were excluded: title unrelated, abstract & conclusion duplication, lack of relevance, wrong study design. After assessment the study analyses five studies (meeting inclusion criteria) on exercise interventions for managing low back pain in nursing staff, revealing key outcomes and trends in this field (Figure 1).

These five experimental trials were conducted from 2014-2023. The study designs were randomized controlled trials, quasi experimental design, interventional study design, and experimental & consecutive sampling technique. The duration of exercise programs varied from 3 weeks to 6 weeks. The exercise programs include spinal extension exercises, Pilates exercises, stretching exercises programs, and exercise interventions such as relaxation of Spinal muscles, stretch posture, maintenance of Spinal and lumber curvature, and posture maintenance & adjustment. The

numbers of participants and results from exercise interventions are listed in Table 1. From the results of these

studies, it has demonstrated exercise programs significantly reduce nurses' lower back pain.

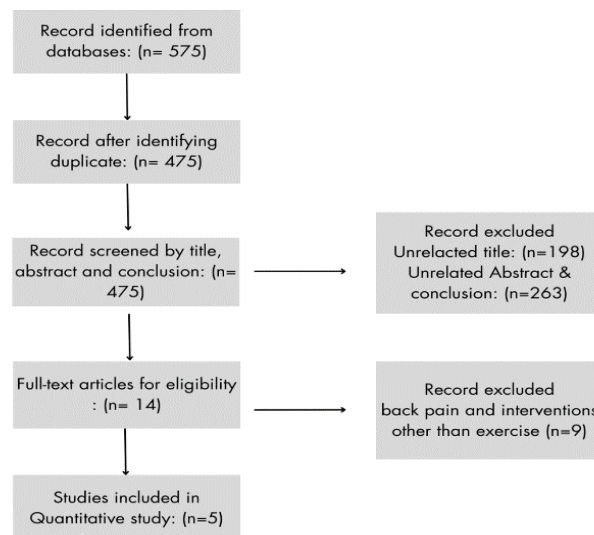


Figure 1. PRISMA selection of study.

DISCUSSION

It is very important to keep a high level of physical activity and regular exercise for people with low back pain. Movements that work the strength and pilates can help. The discussion presents the analysis of five studies about exercise interventions that are aimed to low back pain and their efficacy in the relief of low back pain and functional outcomes, as well as overall wellness that are directed to return high levels of quality of life for nursing staff. For the last three decades, low back pain has become the primary justification for disability worldwide, thus realizing substantial expenditure in direct treatment and expenses for time lost from work.

Recent research has identified exercise treatment of LBP as having reduced quality-adjusted life years and reduced expenditure to the health care system in comparison to standard care, for both acute and chronic patients. For example, in the study of spinal extension exercises, staff nurses from a tertiary care hospital significantly reduced their pain scores and improved their functions. The study reveals the importance of focused exercise intervention in nursing professionals as it improves their lives and performance (Samal et al.). Moreover, another study reported that back exercises reduced pain & disability in hospitalized ward nurses with chronic nonspecific low back pain, are valuable for LBP management. Contributing too

much of the non-pharmacological treatment of LBP in nursing professionals, this study gives a non-pharmacological option for LBP, such as back exercises to recover and prevent disability (Fiter et al., 2018). Evidence-based, effective exercises interventions help identify occupational health strategies. A 6-week exercise intervention program improved low back pain among nursing workers in a study conducted at Mugda Medical College Hospital (Aker et al., 2023). According to one study, Pilates interventions could cure and prevent LBP in nursing students and employees by strengthening core muscles and increasing body awareness, reducing pain scores and impairment (Jadhav et al., 2018).

According to Chen et al., (2014), low back pain could be addressed and musculoskeletal health improved by the implementation of the stretching exercise programme within occupational health programs. A significant reduction in pain scores and improvement in exercise self-efficacy among Taiwanese nurses demonstrated the usefulness of the program (Chen et al., 2014). Results obtained from the conducted studies about five exercise therapies including spinal extension, back exercises, organised programs, Pilates techniques, and stretching exercises show that exercise could be a useful therapy for LBP.

Table 1. findings from the five studies.

Resarch design	Duration	Participants	Group design			Exercise			Result	
experimental and the consecutive sampling technique	6 weeks	322 staff nurses both males & females	Pre-test	Control	Post test			Spinal extension exercise	There was significant reduction in lower back pain	
			4.71±1.21 (Mean±SD)	5.09±1.29	After 2 weeks 4.62±1.29 (Mean±SD)	After 4 weeks 3.58±1.30 (Mean±SD)	After 6 weeks 4.04±2.28 (Mean±SD)			
quasi-experimental study	4 weeks	20	3.4 ± 0.8,			0.5 (0–5.6, p < 0.001)			back-exercise intervention	There was significant reduction in lower back pain
Interventional study	3 Weeks	20 aged between 18-35 years	4.35 (SD=0.933)			2.20 (SD=0.768)			Pilates protocol for exercises	Pilates exercises were efficient in treating non-specific low back pain
Quasi Experimental one group pre-posttest study design	6 weeks	60 nurses	5.40 (SD = 0.74)			1.51 (SD = 1.27)			The exercise program included relaxation of spinal muscles, maintenance of spinal curvature, improvement of lumbar lordotic curvature, stretches postural adjustment and maintenance of spinal mobility	There was significant reduction in lower back pain
Randomized control Trial	6 weeks	127 nurses				81% of the participants reported a moderate to high level of LBP relief.			Streching exercise program	SEP is an effective and safe nonpharmacological intervention for the management of LBP

Exercise therapy is an effective method for reducing low back pain through correcting musculoskeletal abnormalities, developing flexibility, strengthening muscles, and enhancing spinal stability. The publication of clinical investigations has recommended patients with a variety of pain disorders undertake regular physical effort to address chronic pain.

Furthermore, exercise boosts the release of endorphins, making nurses feel better and giving them a better pain tolerance. In summary, incorporating evidence-based exercise interventions into workplace wellness initiatives based on research will enhance nursing staff's musculoskeletal health, reduce the probability of work-related injuries and transform the work environment to one that encourages employees to be more productive. The study has some limitations due to variations in its design, protocols, and sample characteristics. As a result, more research is needed with standardized procedures and extended follow-up durations to rectify these issues.

CONCLUSION

To sum up, the current literature review has highlighted the importance of evidence-based exercise programs to benefit musculoskeletal health and minimize work-related injuries among nursing professionals and the effectiveness of exercise interventions in LBP reduction and maintenance among nursing staff. While enhancing core muscle strength, flexibility, and spinal stability, exercise therapies also help nursing professionals counter LBP through pain relief and mood support. Yet the included studies had numerous restrictions in terms of sample through diversity, intervention methods, and design. Further research should have to include more subjects, use standardized protocols, and investigate the pathophysiological mechanisms of the exercise intervention. Exercise interventions are necessary to address low back pain in nursing staff, improve musculoskeletal health, reduce the burden of LBP, and facilitate a safer working environment.

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