

What are the Most Common Factors Contributing to Physical Lower Back Pain among Working Nurses?-A Systematic Review Study

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Abstract

Background: Lower Back Pain (LBP) is a common complaint among nurses in different clinical settings. There is a large amount of evidence suggesting an association between LBP and various factors. This complaint has serious implications for professional and occupational carriers as well as whole health care systems as nurses form the mainstay of manpower in health care.

Methods: this systematic review is based on a comprehensive search conducted in PubMed, CINAHL, PsycINFO. The two reviewers independently accomplished the full text review for the selected literatures.

Results: A total of 11 studies were to the standards of the inclusion criteria. Different methods of studies were applied to measure and evaluate lower back pain among nurses and factors associated with lower back pain.

Discussion: Initially, all results/studies were analyzed systemically in grids, and then the results of each study were discussed and interpreted according to the variables, method, and study design.

Introduction

Nurses in different settings are exposed to many occupational incidents related to their profession. One of the most common complaints that is associated with nursing as a health care profession is Lower Back Pain (LBP). There is a high percentage of nurses at risk to develop LBP, Andersson [1] concluded that LBP affects 70 to 85% of the population in their lifetime and is one of the greatest causes of activity limitations in those of working age.

Nurses from a large sector of manpower in any health services. The authors have here focused on health problems associated with nursing practice as these have wide implications of the general provision of health care. Several reports in the literature highlight LBP as an alarming issue. LBP prevents nurses from attending duties, working effectively and also influences rates of absenteeism and attrition from the profession. Reports have also described LBP being related to patient fall whilst in hospital, the incidence of which may be considered a major indicator of quality of care. A study by Barzideh et al. [2] reported that LBP is affecting (61.8%) of nurses. It is well established as the most common musculoskeletal disorder affecting nurses.

In this study review, the authors have attempted to find the common factors associated with LBP among nurses in different categories. A structured method of systematic literature review has been adopted to extract information related to LBP within nursing practice. The findings of each reviewed article are discussed. In addition, the implications of the findings to the health care provision are discussed.

Methods

A comprehensive electronic search was conducted by the writers in four databases: EBSCO host Research Databases which includes: Medline Full Text, CINAHL (Cumulative Index of Nursing and Allied Health Limited), and Academic Search Complete. ProQuest which includes: Health & Medical Complete, Nursing & Allied Health and ProQuest Dissertations & thesis. PsycINFO: Covers literature in psychology and related behavioral and social sciences. Cochrane

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Evidence Based Database: Cochrane Library. A librarian who is expert in literature search in health care field was consulted to make sure the best results and latest literatures are searched.

The quality of all included studies was good. The quality scores ranging from 6-9 out of 10 possible points. The authors followed Systematic Reviews to guide them in this review. The authors assessed the selected articles, analyzed and refined the studies and reported the results found.

Besides that, reference lists of the related reviewed studies were hand searched for any relevant studies. Specific criteria were proposed to the selected studies; the reviewed articles should meet the following criteria: The original publication is English language from January 2005 till January 2015. The reviewers tested the suitability of the selected studies, first the reviewer looked at the titles and the abstracts. Then, second screening was conducted for the purpose of confirming the eligibility by the reviewers to evaluate full text of the selected studies. Variation between the two assessments was determined by third assessment to test the eligibility of the unresolved studies.

To ease the process of searching the literatures, the following data were highlighted from each selected study: journal and year of publication of each study, author(s), research objectives, study design, country (where a study was conducted), sample size, unit of analysis, confounding variables, analytic models and findings.

To ensure the consistency of the criteria interpretation, the reviewers independently assessed one study and compared the results. After discussion and resolving the differences in interpretation, the

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reviewers independently assessed all the other articles. For those articles with three or more items with different scores, the reviewers discussed and reassessed to resolve all discrepancies.

Study Selection

The authors considered certain inclusion criteria for the most suitable articles. The articles which met the following criteria: written in the English language, less than 10 years since publication.

Results

The comprehensive search of the two databases yielded 1879 articles (ProQuest 1873, and EBSCOhost 6). After removing duplicates, 1875 articles were screened for eligibility; 1866 articles were excluded after title review. No results found under PsycINFO. The search under Cochrane Evidence Based Database result was 69 articles. Then two articles were excluded after abstract review. The main exclusion reasons: content irrelevance, duplicate, language, full-text, scholarly, old publications, literature review, and qualitative researches. In contrary, the inclusions represented by English language. Limited to 5 years, cross-sectional, pilot trial, and prospective studies. Full text, scholarly journals. Finally, the reviewers end up with 11 articles that most meet the inclusion criteria for the final review (Figure 1).

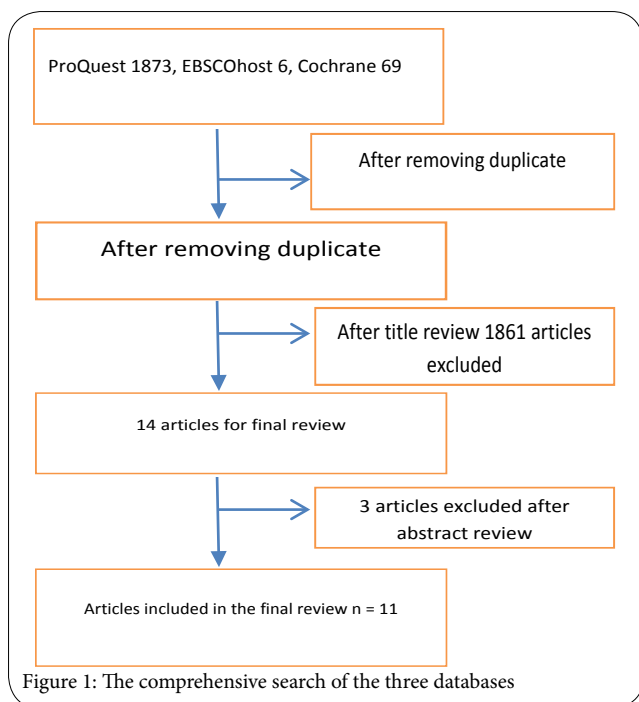


Figure 1: The comprehensive search of the three databases

Characteristics of the Studies

The characteristics of the studies reviewed are presented in Table (1). A total of 11 studies (n=11). The studies were conducted in different places; Pakistan (n=1 equals to9%), TAIWAN (n=2 equals to18%), Saudi Arabia (n=1 equals to 9%), Turkey (n=1, equals to 9%), YEMEN (n=1 equals to9%), Tokyo (n=1 equals to9%), Hong Kong (n=2 equals to18%), USA (n=1 equals to 9%), South Korea (n=1 equals to9%), Australia (n=1 equals to9%).

Majority of the included studies were multisite conducted studies, 7 studies were cross-sectional, one pilot studies, one interventional study, one cohort study and one face-to-face interview. Allocations

and study site varies from 1 hospital/university to 237 hospitals. Most of the studies were conducted on hospital nurses (n=7 equals to 64%), one study was conducted on undergraduate medical and nursing students (n=1 equals to9%), one study conducted on graduated nurses (n=1 equals to9%), and 3 studies targeted only female nurses (n=3 equals to 27%).

Results of Reviewed Studies

Hafeez et al. [4] targeted 183 undergraduate students who completed the questionnaire (72% in medical students; 41% in nursing students). Medical students were 0.47 times more at risk of having back pain. Nursing students sought medical opinion more as compared to medical students but it was not significant. However duration of computer use was more in medical students which was significant (P=0.03). Lin et al [4] assumed that the number of years at work was significantly associated with the pain score for an individual's most recent episode of back pain, the extent of bother sameness of back pain and leg pain, and the extent to which back pain interfered with normal work. Lin et al (2012) concluded that: Back pain is common among hospital nurses in Taiwan. Years at work are significantly associated with pain severity and disability caused by back pain. Al-Eisa et al. [5] claimed that the majority of the 155 participants were female (75%). Participants' ages ranged from 25 to 57 years and their mean body mass index was 25.4 kg/m² (SD = 0.3 kg/m²). Seventy-five percent of the sample (n = 116) reported having back pain at least once in the past year.

Karahan et al. [6] conducted a training program and tried to measure the effectiveness of the training program. The majority of nurses were positive about the training program and evaluated the training as "adequate" (i.e., the training met expectations, new information emerged from the training, the trainer's presentation, voice, and rate of speech were satisfactory). Eighty percent of the nurses stated that the time of the training within the day was appropriate, and 86.7% thought the duration was adequate. Ghilan et al [7] the prevalence was significantly lower in Indian nurses compared to other nurses. Three out of every 10 nurses with LBP had sick leave because of LBP in the last 12 months. Factors that showed significant association with LBP among nursing staff in the multivariate analysis were age, nationality, menstrual disorders and stress level at work. Kamioka et al [8] found that there is no significant differences were seen for any outcome measurements.

Cheung [9] as expected, the risk factors for low back problems were multifactorial, i.e. personal, psychosocial and physical. Sadeghian et al. [10] suggested that the lifetime prevalence of back pain was 82.03%, and the point prevalence of back pain was 43.78%. The mean pain score is 41.67. The number of years at work was significantly associated with the pain score for an individual's most recent episode of back pain, and the extent to which back pain interfered with normal work. Lin et al. [11] fifty-six (38.9%) nurses reported experiencing new low back pain. Sedentary leisure time activity was not associated with new low back pain. Being comparatively new on a ward (adjusted relative risk 2.90) working in bending postures (adjusted relative risk 2.76) and poor work relationships with colleagues (adjusted relative risk 2.52) were independent predictors of new low back pain.

Cho et al. [12] the mean age of nurses was 27.2 years. Overall, 90.3% of nurses had back pain at least once a month (21.9% always, 40.7% once a week and 27.2% once a month). Only 18.3% had received

medical treatment for their back pain. Compared with neonatal intensive care unit nurses, who had the lowest prevalence, nurses in other specialties, excluding pediatric intensive care units, had a greater likelihood of back pain. Specialty medical (e.g. cardiology, neurology) intensive care unit nurses had the greatest probability of back pain and treatment. Nurses with 2-4 years of working experience in intensive care units had the greatest probability of back pain and treatment.

Mitchell et al. [13] low back pain prevalence rates were consistent across all 3 year groups of undergraduate nursing students, but were significantly higher after 12 months of full-time employment. Around 60% of all respondents with low back pain utilized at least one of (a) treatment, (b) medication, or (c) reduction in activity. Nursing students and graduate nurses attributed the majority of their low back pain to bending or lifting despite recent efforts to reduce manual workplace demand (lifting) on nurses. Strategies for managing low back pain differed between nursing students and graduate nurses (Table 1).

Independent Variable Measures

All studies provided personal information of the subjects, age, gender, and nationality were found to play a direct role in the increased reported number of LBP cases [7,10, 14]. In many of the studies work experience was examined, in specific years in the current ward and monthly records of night shifts were recorded and were found to have a direct correlation with LBP [7, 11, 15-17]. Finally psychoanalytic questions were given in some of the studies, stress in the workplace, low satisfaction with colleague relationships, low moods (headaches/fatigue), and personal beliefs on LBP were all linked with increased incidence of LBP [7, 15, 16]. Other factors that were found to link with LBP include: bending frequently to work, menstrual disorders, knowledge of back care ergonomics, field of specialty, and years at work [11, 14, 15]. It is also important to note how the studies measured prevalence of LBP, with all studies questioning if the subjects had experienced this pain in the past 2 weeks (in some cases 1-12 days), past month, or past year [10, 11, 15] differed in this measurement by including a point prevalence which asked if the person was currently experiencing back pain (6). Prospective studies also differed by asking if a person had suffered from LBP in the 12 month time between the initial baseline interview and the telephone follow-up [10, 15, 16].

Discussion

One experimental article used in this study. The most common method was cross-sectional (n=7), one pilot studies, one interventional study, one prospective, and one cohort study. In regards to sample size and area of conducting studies, it varies from one study to another. Sample size was minimum of 88 participants reaching up to 1345 participants. Site where studies conducted differs as well; universities, hospitals, and nursing homes. Majority of the reviewed studies considered questionnaire as a method for data collection (n=8), while only one study depend on survey for data collection (n=1), the remaining reviewed studies utilized questionnaire with face-to-face interview (n=3). In most of the reviewed studies, SPSS in different versions was applied to analyze data (n=10), while one reviewed study used Small Stata 11.0 and the other used SAS version 9.1 for data analysis.

It is clear from the studies we have found that lower back pain is conclusively associated with a career in nursing. Although the

probability differed in many of the cases, each study showed that a percentage of nurses had complained of LBP at least once in the previous 12 months. Prospective studies also showed that those who had not complained of LBP in the baseline interview had a chance of developing LBP in the following 12 months [10, 15, 16]. The presence of LBP is significant, as most nurses will have a persistent pain throughout their lifetime, proven by Maul et.al. [18], which may contribute to early retirement (8).

Each study linked LBP with certain criteria. For instance, many studies discovered that lack of experience in a new ward led to an increased incidence of LBP reported [11, 15, 16]. This shows that more experienced nurses don't complain of LBP either due to being accustomed to it or having learnt how to handle patients in a way that avoids back pain.

Other studies focused more on the psychoanalytical factors of work that may be associated with incidence of LBP. It was found in two of the articles that less satisfaction in relationships with work colleagues led to a higher amount of reported LBP [15, 16]. This may be in due to the fact that nursing is a career associated with teamwork and poor relationships may lead to consequences such as poor patient handling and increased stress, which are factors associated with LBP [7]. Stress in particular was linked with LBP, confirmed by Yin Bing Yip et al., their study discovered that nurses who felt low satisfaction/occasional satisfaction with their job were at an increased risk for LBP [19]. Furthermore in another study it was found that nurses who were dissatisfied with staffing had a higher reported incidence of LBP [17]. Understaffed hospitals may be forced to increase the number of night shifts on the available nursing staff, the article had also linked six or more night shifts a month with LBP [17]. Finally, another article discovered that nurses who had associated their work with incidence of LBP were at an increased risk of developing it in the future [10, 20].

It is important to note that one study linked nationality with increased report of LBP. In a study conducted in Yemen, Khaled Ghilan et al. discovered that Yemini nationals had a higher reported incidence of LBP than any other cultural demographic [7]. Other studies surprised the masses by making massive contradictions to previous studies. In Taiwan, Pei-Hsin Lin et al revealed that nurses in intensive care units had a surprising low amount of LBP reported, contradicting the belief that the ICU is the most prominent ward associated with back problems [11]. Furthermore, Farideh Sadeghian et al. [10] and her team linked age with increased incidence of LBP, even though the majority of studies prove otherwise. However, these contradictions may be due to the low number of participants involved in both studies and they remain open to further research.

One of the problems associated with the articles was that a majority of them didn't define lower back pain. Pain is a very subjective unit of measure; as a result it is crucial that the researchers define LBP in an appropriate manner to ensure that the subjects involved with the research understand what is meant by LBP. One of the researchers included questions regarding knowledge of back care hygiene in their instrument, a fruitful way to recognize the understanding of the subjects in question [14]. Furthermore, there was a lack of instruments used in assessing the degree of pain. A uniform pain questionnaire such as the McGill Pain questionnaire should have been used as the standard for all the conducted research on nurses with LBP to properly assess the pain.

Clinical Implications

Hospital executives around the world must now acknowledge that their nursing staff is at risk for developing LBP. Due to this problem many nurses have taken sick leaves, but what is more alarming is the fact that many nurses have not received appropriate treatment for their pain [11,16,17]. Many nurses acknowledge their back pain but either don't have the time to treat it, or don't want to fall under the stigma of having a "bad back". It may also be due to the fact that nurses are afraid of losing their jobs if they admit to suffering from LBP while working, since their role in the hospital involves heavy lifting. The idea of education programs and increasing staff number in hospitals may be a means to reduce this stress from the nurses who suffer from LBP. Furthermore, since many studies associated LBP with psychoanalytical programs, perhaps hospitals should look into team building programs and cognitive therapies to increase the mood of the nurses in their staff.

Limitations

Most of the included studies were descriptive cross-sectional. In other words, the experimental articles were limited. Also, the inclusion criteria were limited to the past 10 years only, and it does not include the other health care providers who may be at risk of LBP such as physiotherapists, nursing aids, paramedics ... etc. The researchers depended on electronic resources only and did not delve outside the database. Most of the studies were conducted in short time span (around two months) and the search discontinued after starting the study.

The interpretation of results from each study was limited by the differences in variable measures across studies and methodological flaws. The relationship between the factors leading to LBP need to be further confirmed by stronger evidence from studies using standardized measures and more rigorous research design.

Conclusions

This literature review found that a number of nurses in hospitals around the world are suffering from lower back pain. It was suggested that a variety of factors including psychosocial, personal (age, gender, nationality, etc.) and work related factors all contributed to increased diagnosis of LBP. Further studies of this topic are required to confirm the causes of increased incidence of LBP in nurses.

Competing Interests

The author (s) declare that they have no competing interestes.

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