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Original Article

Do Psychological Factors Increase the Risk for Low Back Pain Among Nurses? A Comparing According to Cross-sectional and Prospective Analysis

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ABSTRACT

Background: This study assesses influences of baseline psychological risk factors on prevalence of low back pain (LBP) at baseline and follow-up among nurses.
Methods: A prospective longitudinal study was performed at two phases, baseline and 1-year follow-up among 246 nurses of university hospitals in Shahroud, Iran. A standardized Cultural and Psychosocial Influences on Disability questionnaire was used for data collection. Logistic regression was performed for analysis.
Results: At the baseline of the study, 58.9% of nurses reported back pain in the previous 12 months. Age ($p = 0.001$), belief that work causes pain ($p = 0.022$), and somatization tendency ($p = 0.002$) significantly increased risk of LBP. At 1-year follow-up, prevalence of LBP was 45.7% and expectation of back pain at baseline ($p = 0.016$) significantly increased risk of LBP in this phase ($p < 0.05$).
Conclusion: Results indicate that risk factors for prevalence of back pain at baseline and 1-year follow-up are different. At baseline, the risk factors are age, belief that work causes pain, and somatization tendency, and at follow-up, expectation of pain is the major risk factor.

1. Introduction

Low back pain (LBP) is a prevalent health problem among nurses [1,2]. The highest rate of lost workdays and compensation claims related to nurses are because of LBP [3]. Epidemiological research has shown that LBP is connected to individual, physical, and psychosocial risk factors [4–6]. Furthermore recent studies have indicated that health beliefs and culture affect musculoskeletal complaints and its disability as much as physical activity and mental health [7,8] and individual beliefs and expectations are significant predictors for LBP [9,10]. Also, studies have indicated that prolonged disability and absence from work among patients with LBP is related to fear-avoidance beliefs [11] and positive health beliefs about LBP reduce disability due to LBP [12]. Moreover, some researchers have shown that somatization tendency should be considered as a confounding variable on occupational risk factors for musculoskeletal disorders [13].

This study was conducted because very few studies have investigated psychological risk factors of LBP especially among nurses in Iran. Furthermore, health beliefs about LBP and cultural factors differ significantly in various countries. It is unclear whether the results of cross-sectional analysis are similar to longitudinal researches, so this study compares psychological risk factors of LBP at baseline along with individual, physical, and psychosocial factors for the prevalence of LBP at baseline with LBP at follow-up among nurses.

2. Materials and methods

A longitudinal study with 1-year follow-up was performed among all nurses with at least 1-year's employment at three

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Table 1
Characteristics of the study population at baseline and follow-up

Characteristics	*N* (%)	At baseline ($n = 246$)	At follow-up ($n = 219$)
Sex	Male	45 (18.3)	41 (18.7)
	Female	201 (81.7)	178 (81.3)
Age (y)	<30	80 (32.5)	55 (25.1)
	30–39	115 (46.8)	116 (53.0)
	40–49	44 (17.9)	39 (17.8)
	50–60	7 (2.8)	9 (4.1)
Back pain: (baseline: previous 12 months), (follow-up: past month)	Yes	145 (58.9)	100 (45.7)
	No	101 (41.1)	119 (54.3)
Disabled by back pain/back pain		27/145 (18.6)	17/100 (17)
Mental health score (SF-36)*	Low	12 (4.9)	6 (2.8)
	Middle	108 (43.9)	79 (36.4)
	High	126 (51.2)	132 (60.8)
Somatization tendency score†	High	4 (1.6)	—
	Middle	74 (30.1)	49 (22.4)
	Low	168 (68.3)	170 (77.6)
Belief about work-causation of pain‡	Yes	181 (73.6)	—
	No	65 (26.4)	—
Belief about fear of physical activity on low back pain‡	Yes	196 (79.7)	—
	No	50 (20.3)	—
Expectation of back pain‡	Yes	86/145 (59.3)	—
Lifting weights ≥25 kg by hand‡	Yes	61 (24.9)	—
	No	185 (75.1)	

* Mental health score: low, 0–125; medium, 125–250; and high, 250–375.
† Somatization tendency score: low, 0–9; medium, 10–19; and high, 20–28.
‡ This question was not on the follow-up questionnaire.

university hospitals in Shahroud, Iran in 2008 and 2009 and 1 year later. The aim of the study was explained to each potential participant, and those who agreed to continue answered the baseline questionnaire in their workplace. The follow-up questionnaire was shorter and 1 year later asked about LBP in the past month. In total, 246 eligible nurses consented to participate at baseline (response rate was 94% among those enrolled).

The baseline questionnaire was a standardized Cultural and Psychosocial Influences on Disability (CUPID) questionnaire [7] including seven sections. (1) Individual factors (sex, age, smoking status, work hours/week, job history, etc.). (2) Physical and psychosocial risk factors at work (lifting weights ≥25 kg by hand, working with the hands above shoulder height; repeated bending and straightening of the elbow and kneeling or squatting for longer than 1 hour in an average working day, piecework or bonuses, time pressure, lack of choice in work, lack of support from colleagues or manager, job dissatisfaction and job insecurity). (3) LBP lasting 1 day or more in the previous 12 months and 1 month (Nordic questionnaire) [14] and its consequences; sickness absence, medical cares, and disability in addition a question about expectation of pain: "Do you expect your LBP would be a problem for you in the next 12 months?" The question about disabling pain was: "During the past month, has LBP made it difficult or impossible to carry out any of a specified list of everyday activities (getting dressed, doing normal jobs around the house, or cutting toe nails)". Pain was categorized as disabling if it had made all of these three activities impossible or difficult. (4) Awareness of other people with LBP at work and outside. (5) Somatizing tendency (dizziness, pains in the heart or chest, upset stomach or nausea, trouble getting breath, hot or cold spells, or all during the past week; Brief Symptom Inventory questionnaire) [15]. (6) Beliefs about work causation and fear of physical activity in LBP (Fear Avoidance Beliefs questionnaires) [16]. (7) Mental health [SF-36 (MH) questionnaire] [17]. Final relevant scores of somatizing tendency and mental health were graded to three levels, representing high, middle, and low.

The questionnaires were translated to Farsi, back-translated to English independently, amended as necessary, and then piloted.

Statistical associations between independent variables and LBP were initially evaluated using univariate and multiple logistic regression models. Two models were used for data analysis. LBP at baseline were assessed with risk factors at baseline (individual, physical, and psychosocial risk factors at work, awareness of other people with LBP at work and outside, somatizing tendency, beliefs about work causation and fear of physical activity in LBP, mental health) at the first model (cross-sectional model, $n = 246$). LBP at follow-up also were assessed with risk factors at baseline at the second model (longitudinal model, $n = 219$). The level of significance was set at 0.05. Statistical analysis was carried out with SPSS version 17 software.

The ethical approval for the study will be sought from the research committee of Shahroud University of Medical Sciences.

3. Results

The baseline questionnaire was completed by 246 nurses (response rate was 94%). Mean age and work hours/week were (mean ± standard deviation) 33.7 ± 0.2 years and 47.5 ± 8 hours, respectively. Of the 246 nurses, 69% had >5 years' work experience, 61 nurses (25%) reported lifting weights ≥25 kg by hand at work. Prevalence of LBP at baseline in previous 12 months was reported by 145/246 (58.9%). Among them, 27/145 cases (18.6%) led to

Table 2
Back pain at follow-up according to lower back pain status at baseline ($n = 219$)*

Baseline back pain	Follow-up back pain, *N* (%)			Total
	No	Yes (not disabled)	Yes (disabled)	
No	69 (77.5)	17 (19.1)	3 (3.4)	89
Yes (not disabled)	45 (42.1)	58 (54.2)	4 (3.7)	107
Yes (disabled)	5 (21.7)	8 (34.8)	10 (43.5)	23
Total	119	83	17	219

* Pain was categorized as disabling if it had made three relevant activities impossible or difficult.