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Work-related stress and quality of life among Iranian blue-collar workers with self-reported low back pain

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Abstract

Background: Impairment in quality of life and mental health had been reported in the previous studies as the results of musculoskeletal disorders among workers. Mental health has a wide concept and contains different disorders including anxiety, depression or even decreased quality of life, all of which having challengeable impacts on work- related characters such as work productivity and absensism. The present study aimed at evaluating work- related stress and quality of life among Iranian blue-collar workers of Fars ABFA Company with self-reported low back pain.

Methods: In the present study, we focused on the low back pain among 451 blue-collar workers and assessed their work- related stress and quality of life status using DASS-21 and short form questionnaire (SF-36), respectively. Independent sample t-test was used to compare the qualitative variables, and chi-square test was utilized for statistical analysis of the qualitative variables.

Results: Mean of the total score of quality of life among workers with low back pain was significantly lower than in those workers without low back pain. The mean of work- related stress score was significantly higher in workers with low back pain than in workers without low back pain. The mean quality of life subdomains in patients with low back pain was significantly lower than in workers without low back pain.

Conclusion: Findings of the present study revealed that workers with low back pain had lower quality of life score and higher work- related stress score. These findings should be considered in designing preventive programs rather than controlling the pain.

Keywords: Low Back Pain, Quality of Life, Occupational Stress.

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Introduction

Low back pain (LBP), as a musculoskeletal disorder, has different socioeconomic consequences in the large population of industrial countries (1). Previous studies have shown that the prevalence of musculoskeletal disorders such as LBP was significantly higher among workers of different workplaces compared to the general population (2,3). In developing countries, some factors including lack of awareness about ergonomics, insufficient education, and absence of training programmers can increase LBP burden (4). Although LBP might not directly lead to poor quality of life, it could decrease labour productivity due to increased absenteeism and early retirement (1).

In Iran, working condition is poor and there are no local or national effective MSD preventive programs to improve working conditions (5). Musculoskeletal disorders such as low back pain can cause wide spectrum of chronic complications such as quality of life and general health impairment (6,7). Mental health has a wide concept and contains different disorders including anxiety, depression or even decreased quality of life, all of which having challengeable impacts on work-related characters such as work productivity and

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absensism (8,9). Nowadays, mental health assessment and improvement in workers are considered in occupational policymaking. Moreover, undiagnosed mental health problems are reported as cause of work absences and decline of work productivity (7). In most previous studies, quality of life and mental health status were evaluated separately in the workers, but some interactions were missed between their indices. The present study aimed at evaluating low back pain prevalence and its association with work -related stress and quality of life status among blue-collar workers of Fars ABFA Company.

Methods

Blue-collar workers with self-reported low back pain selected from the ABFA registry system were included into the present cross- sectional study. In one collaborative research study with Occupational Medicine Research Center (OMRC), Fars Province Water and Wastewater Company (ABFA), with more than 1,200 white and blue-collar workers, developed ABFA registry system to better manage the main occupational disorders such as musculoskeletal disorders among their white and blue-collar workers. ABFA registry collected demographic variables such as sex, age, height, weight, smoking, and body mass index, and work-related variables such as employment duration, and shift working. Extra job and employment type were gathered as general data. Moreover, work- related stress and quality of life status were assessed using DASS-21 questionnaire and the short form questionnaire (SF-36), respectively. Physical and psychological confounding variables were matched before the final analysis. The ethical committee of Iran University of Medical Sciences approved the study protocol. In the present study, we focused on the low back pain among blue-collar workers and assessed the association of prevalence of low back pain among them, considering its relations with work- related stress and quality of life.

Study Tools

The Nordic Musculoskeletal Questionnaire (NMQ) was developed from a project funded by the Nordic Council of Ministers (10). The aim was to develop and test a standardized questionnaire methodology, allowing comparison of low back, neck, shoulder, and general complaints for use in epidemiological studies. The tool was not developed for clinical diagnosis. This questionnaire can be used as a questionnaire or interview device (11). The NMQ has been used in several studies to evaluate musculoskeletal problems including computer and call center workers (12), car drivers (13), and those working in cooper industry (14). Previous studies reported that the NMQ is repeatable, sensitive, and useful as a screening and surveillance tool. However, medical examination is essential to establish a clinical diagnosis (15,16).

Work related- stress among the study participants was measured using DASS-21 questionnaire. Each of its three subscales including stress, anxiety, and depression has 7 items. Each item comprises a statement and 4 short response options to reflect the severity, which scored from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Stress score was calculated with duplicating the sum of scores of 7 stress- related questions, which ranged from 0 (without stress) to 42 (stressful) categories. We divided the calculated stress score of the participants into 5 categories including normal (<14), mild (15-18), moderate (19-25), sever (26-33), and very sever (>34). Those with moderate severe and very severe stress scores were located as the exposed and those with normal or mild stress score were located as unexposed groups.

A 36-item short form (SF-36) questionnaire was used to assess the quality of life among the study participants. The SF-36 was designed for use in clinical practice and research, health policy evaluations, and general population surveys (17).

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Statistical Analysis

Data were entered into the SPSS software. Mean/standard deviation and frequency/percentages were used for descriptive analysis of qualitative and qualitative variables, respectively. Independent sample t-test was used to compare qualitative variables and chi-square was utilized for statistical analysis of qualitative variables. P-values less than 0.05 was considered statistically significant.

Results

In our study period, we used occupational data of only 451 blue-collar workers from all 550 blue-collar workers of ABFA Company. Registry data of the 99 workers were not completed, so we could not include their data into the study. Most of the study participants were male (n=411, 91.13%). Mean±SD of age and work experience among the blue-collar workers were 43.10±8.44 and 17.43±8.37 years, respectively. Mean±SD of body mass index was 25.38±5.29kg/m^2 among the study participants. Among the blue workers, 91 (20.2%) were smokers, 128 (28.4%) had shifting work schedule, and 53 (11.8%) had extra job. One-year prevalence of low back pain was 44.2% among the ABFA blue-collar workers.

Mean±SD of age among workers with low back pain was significantly higher than in other workers (44.04±8.61 vs. 42.38±8.25; p=0.039). Mean of job experience and body mass index were not significantly different between the two groups. The frequency of smoking did not have a significant association between workers of the two groups (21.8% vs. 18.9%; p=0.44). The prevalence of low back pain had no significant associations with shift working (p=0.44) (Table 1).

Mean of the total score of quality of life and work- related stress among the participants was 72.57±17.83, and 16.21±4.13, respectively. Mean of the total score of quality of life among workers with low back pain was significantly lower than in workers without low back pain (63.90± 17.39 vs. 79.42±15.01; p<0.001). In DASS-21 questionnaire, the mean of stress score among the workers with low back pain was significantly higher than in workers without low back pain (21.39±4.56 vs. 15.64±2.85; p<0.001). Table 2 demonstrates the mean

Table 1. Comparing the Demographic Variables between Blue-Collar Workers with and without Low Back Pain

Variable		Without LBP	With LBP	p
Sex	Female	21 (8.3%)	18 (9.1%)	0.93
	Male	232 (31.3%)	179 (90.9%)	
Age (Mean SD)		42.38 ± 8.25	44.04 ± 8.61	0.04
Work experience		16.90 ± 9.23	18.09 ± 7.11	0.14
Smoking	Yes	48 (18.9%)	43 (21.8%)	0.44
	No	206 (81.3%)	154 (78.2%)	
Extra job	Yes	25 (10.1%)	28 (14.4%)	0.27
	No	221 (89.5%)	166 (85.6%)	
Shift Working	Yes	76 (29.9%)	52 (26.4%)	0.41
	No	178 (70.1%)	145 (73.6%)	
Marital status	Yes	27 (10.6%)	11 (5.6%)	0.15
	No	225 (88.6%)	186 (94.4%)	

Table 2. Comparing SF36 and GHQ Subdomains between Workers with and without Low Back Pain

SF36 Subdomains	Without LBP	With LBP	p
Physical function	87.05 ± 19.49	72.38 ± 25.94	<0.001
Role limitations due to physical health	82.65 ± 26.40	62.50 ± 34.70	<0.001
Role limitations due to emotional problems	79.32 ± 31.63	63.39 ± 38.42	<0.001
Energy/ fatigue	71.49 ± 18.26	60.78 ± 19.60	<0.001
Emotional wellbeing	75.93 ± 17.17	65.66 ± 18.13	<0.001
Social functioning	80.87 ± 19.94	66.28 ± 24.04	<0.001
Pain	84.71 ± 17.38	63.85 ± 23.26	<0.001
General health	69.84 ± 18.63	58.29 ± 19.63	<0.001
DASS stress score	15.64±2.85	21.39±4.56	<0.001

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of quality of life and work- related stress score between blue-collar workers with and without low back pain. The mean quality of life subdomains in patients with low back pain was significantly lower than in workers without low back pain.

Discussion

In our comparison on 451 ABFA blue-collar workers, the one-year prevalence of low back pain was 44.2%. The mean of SF36 subdomains including physical function, role limitations due to physical health, role limitations due to emotional problems, energy/ fatigue, emotional wellbeing, social functioning, pain and general health in workers with low back pain was significantly lower than in other workers. In one study in Greece, it was found that most of musculoskeletal symptoms had been associated with decline in the mean of quality of life indices. In another similar study on the office workers a hospital, workers with low back pain had lower scores in some SF36 scores such as physical function, pain, emotional wellbeing, and general health (18). In one study conducted on the hospital personnel, workers with musculoskeletal disorders had lower scores in physical function, pain, emotional wellbeing, and general health (19).

In workers with low back pain, physical function had the highest score, and role limitation due to emotional problems had the lowest score among SF36 subdomains. On the other hand, back pain had low impact on the physical function of the study participants, and the workers performed daily activities against their pain experiences and had more limitation in their activities due to mental health problems. Picavet et al., in their study on the general population, reported that people with musculoskeletal symptoms had lower scores in physical function, pain, general health, and role limitations due to physical health compared with other people (20). Our findings were similar with those of other studies, and we could conclude that quality of life in workers with musculoskeletal complaint such as low back pain was lower than other workers without the noted complaints.

In the present study, scores of work- related stress was significantly higher in workers with low back pain compared with other workers. Epidemiological studies conducted on determining the risk factors of musculoskeletal disorders had a main role in designing preventive strategies for chronic pain among the workers. According to a previous systematic review, high job demands and low social/work support were psychological risk factors for musculoskeletal disorders among workers (21-25). There were limited valid evidences for other psychological factors such as work- related stress (25). Although number of studies on assessing mechanical and psychological risk factors such as work- related stress on incidence of low back pain increased in the recent years, most of them are not completely reliable due to small sample size or their cross- sectional design (21, 23, 24). Moreover, conclusions based on occupation may not be valid in the general working population and can only be extended on the same working position and tasks. Similar to our study, some previous studies assessed work- related stress using a questionnaire and found that the risk of developing pain was higher in those participants previously exposed to stress (26-28).

Our study had some strengths and limitations. One of the strengths of our study was the temporarily assessment of quality of life and mental health in our participants. Most similar studies worked only on one of these factors, and the temporary assessment of the two noted related topics could help us determine the relationship between low back pain prevalence with each of these factors. Our study had some limitations. First, this study had a cross- sectional design and this type of methodology can only determine the association and cannot find a causative association. Future studies should be done with cohort design to overcome this limitation. Second, we performed this study on one job type and at one workplace. Thus, for the future studies, conduct-

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ing a multicenter study that includes different job titles such as office workers and managers is highly recommended.

Conclusion

It seems that workers with low back pain had lower quality of life score and higher work- related stress score. Moreover, these findings should be considered in designing preventive programs rather than controlling pain.

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