

Short Note on Occupational Stress, Musculoskeletal Disorders and the Mental Health of Coal Miners

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Abstract

The most innovative and primary contributor to the growth of the coal industry is the workforce of coal miners. The safety of coal mine production, which has a direct impact on the growth of the national economy, is contingent on the workers' mental and physical health. However, studies have shown that coal miners' physical and mental health is in poor shape. Their health is not only affected by traditional occupational hazards like dust, gas, and physics, but also by new occupational hazards like ergonomics and psychosocial factors that are getting worse. Mental and musculoskeletal disorders (MSDs) are common among coal miners, according to studies, and they pose a serious threat to their mental and physical health.

Key words: Anxiety, Depression, Terror

Introduction

Excitement and an inability to adapt to the social environment are all common mental disorders that reflect an individual's mental health. Worldwide, mental disorders affect a wide range of populations and have a high lifetime prevalence. The World Health Organization (WHO) estimates that the global prevalence of depression and anxiety disorders is 4.4% and 3.6%, respectively, and that the number of people suffering from these conditions is rising. Systemic diseases that affect the cardiovascular system, nervous system, and endocrine system can also be caused by mental disorders. These diseases not only put people's physical health in jeopardy but also put a lot of financial and psychological stress on families, which adds to the country's significant financial burdens. Stress at work is one of many things that can have an impact on mental health. Coal miners are more likely than other workers to experience occupational stress because of the unique working environment and nature of the job.

Workers can experience a variety of abnormal physiological, psychological, and behavioral responses as a result of persistently high levels of stress, which will have negative effects on their mental health either directly or indirectly. Workplace stress has been linked to a variety of psychological issues among employees, including somatization, compulsive symptoms, anxiety, and depression, according to studies.

Result

MSDs are common among coal mine workers because of the harsh working conditions, strenuous work, and repetitive work. People are gradually recognizing the significance of psychological factors in MSDs thanks to in-depth studies of their etiology. Some researchers have even proposed that the influence of psychological factors may be greater than that of biological factors. MSDs also have the potential to exacerbate negative mental states. MSDs may raise employee levels of stress, anxiety, and depression, according to other studies. As a result, many academics believe that psychological factors and MSDs are linked in both directions through a feedback loop: MSDs can be caused by negative psychological factors, and MSDs will have a negative effect on a person's psychological state, which will make MSDs even worse. Medical sociologists have paid more attention to how social factors and biological factors interact in recent years. Some researchers are of the opinion that the major roles that genetics and the environment play in explaining the overall picture of some complex diseases are insufficient. Gene-gene and gene-environment interactions play a significant role

in the interpretation and analysis of complex diseases in addition to the main effects. The relationship between BDNF and the TPH2 gene polymorphism has only been the subject of a small number of studies, and the underlying mechanism is still a mystery. Numerous studies have demonstrated that the 5-HT and BDNF systems interact with one another. TPH2, a crucial rate-limiting enzyme in the brain's 5-HT synthesis pathway, may interact with BDNF, affecting mental health.

Discussion

Rarely is the connection between MSDs and coal miners' mental health reported at this time. As a result, the current state of mental health and MSDs among coal miners are the focus of this study, as is the connection between mental disorders, occupational stress, and MSDs. The effects of gene-gene and gene-environment interactions on the prevalence of mental disorders are further investigated in this paper. A risk prediction model of mental disorders was created on this basis to provide coal miners with a scientific foundation for the prevention and treatment of mental and skeletal muscle disorders. Additionally, it provides a scientific foundation for further enhancing their physical and mental health and establishing a stable, harmonious workplace.

The Symptom Checklist-90 (SCL-90) was used to assess mental health in this study, and individuals' mental health status was assessed over a week. The nine additional factors of somatization, compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, fear, paranoia, and schizophrenia comprised the remaining 90 items on the scale. A total score and a factor score served as the primary statistical indicators and responses were evaluated using the following scale, which ranged from one to five: 1 indicates nothing, 2, moderate, 4, severe, and 5, severe. The severity of the mental health condition increases with score. Mental disorders are defined as: Score of 160

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points for the whole or more than 2 points for any factor. The scale had a validity coefficient of 0.77–0.99 for each symptom.

The Chinese version of the Effort-Reward Imbalance questionnaire (ERI), which was first proposed by Siegrist of Germany, was used to measure occupational stress. There were three modules in the questionnaire: effort, reward, and overload. There were a total of 23 items in each module, consisting of six, eleven, and six items, respectively.

Conclusion

The ERI method of evaluation: Each entry received the same weight, and its $ERI = (E/R)$ indicator was used. $ERI > 1$ indicates high effort and low reward, $ERI = 1$ indicates balance between effort and reward, and $ERI < 1$ indicates low effort and high reward. Workplace stress is considered to be present when the ERI is greater than 1. The degree of occupational stress is proportional to the ERI ratio. The Chinese version of the questionnaire has a reliability and validity of 0.91 and 0.063, respectively. The jointly developed questionnaire for musculoskeletal disorders was used in this study. The questionnaire, which was based on the Nordic Musculoskeletal Survey, divided the body into nine parts: the neck, shoulder, upper back, elbow, lower back, wrist, hip, knee, and foot. In the past year, respondents were asked if they had experienced any symptoms of discomfort at various bodily locations and if they had been absent from work as a result. MSDs

are defined in this paper in accordance with the American National Institute for Occupational Safety and Health (NIOSH) standards for musculoskeletal injuries. In this definition, MSDs are regarded as affecting each muscle joint area of the body, and the conditions listed below are presented.

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