

Ergonomic Problems Among Physiotherapists - Scientific Review of the Literature

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ABSTRACT

Purpose of the Article: The purpose of the article is to present a paper about to compared research which has dealt with musculoskeletal disorders in physiotherapists and other health professionals at work and to record ergonomic problems.

Materials and Methods: In March and April 2019 were searched various biomedical databases such as PubMed, ResearchGate and Academia.edu using the keywords "Work Related Musculoskeletal Disorders", "Musculoskeletal Injuries", "Work Injuries", "Physiotherapists", "Occupational health", on the basis of which the presentation of the data obtained in the found research was done.

Results: We have selected four studies that we have included in this scientific review of the literature based on the purpose and objectives of the paper. The studies are from India, Greece and Iran.

Conclusion: Based on the reviewed studies, the conclusions are: the main ergonomic risks for physiotherapists are: bending the torso forward, flexion of the neck and prolonged standing; education, awareness-raising and training programs on prevention and strategies for dealing with musculoskeletal disorders related to work oblige health professionals, especially high-risk groups such as nurses, dentists and physiotherapists, to reduce the occurrence of these disorders; work-related musculoskeletal disorders can be prevented with three affordable things, i.e. designing an ergonomic work environment, postural education, and regular exercise.

Introduction

Ergonomics is a scientific discipline that deals with improving working conditions and products, reducing the risk of injuries, reducing the risk of work-related diseases and promoting healthy attitudes towards the environment and the work environment. Musculoskeletal disorders related to work are responsible for morbidity in many working populations and are known to be an important work problem that leads to increased health costs, reduced productivity, and lower quality of life [1]. There are more and more lost working days due to back pain, which also affects health care itself [2]. Nonspecific lower back pain is an

uncomfortable medical condition that can make work impossible and is a common reason for absenteeism. According to the World Health Organization (WHO), human health hazard assessment is "a procedure that assesses the nature and likelihood of adverse effects on human health due to exposure to one or more factors of physical or mental stress" (WHO 1981). Health hazards are classified as biological, chemical, organizational, or psychosocial that include work-related violence. Health and social work activities have a higher rate of work-related disorders than other activities. These are mainly musculoskeletal disorders, stress, depression and

anxiety. Nurses, nurses and other staff are among the 10 occupations with the highest risk of muscle and joint sprains. The assessment of health hazards related to physical activities is the subject of a number of guidelines [3]. It is very important to educate healthcare professionals about all the dangers of their job in time, as well as to enable work with devices that help prevent the occurrence of diseases. Unfortunately, nurses and physiotherapists today do most of the work manually. Every healthcare professional needs to be warned about the risks they are exposed to every day [4]. The main problems of traditional ergonomics were how to reduce muscle work and movements, and today the problems are related to static and repetitive work.

Objectives of the Work

The purpose of the article is to present a paper about to compared research which has dealt with musculoskeletal disorders in physiotherapists and other health professionals at work and to record ergonomic problems.

Materials and Methods of Work

In March and April 2019 were searched various biomedical databases such as PubMed, ResearchGate and Academia.edu using the keywords "Work Related Musculoskeletal Disorders", "Musculoskeletal Injuries", "Work Injuries", "Physiotherapists", "Occupational health", on the basis of which the presentation of the data obtained in the found research was done. The research is limited to articles published in English. The research of ergonomic problems among physiotherapists is a non-experimental qualitative research, ie a scientific review of the literature.

Results and Discussion

We have selected four studies that we have included in this scientific review of the literature based on the purpose and objectives of the paper. The studies are from India, Greece and Iran. The studies are presented in Table 1.

Table 1.

Serial number	Author (s)	Name of the Study	Type of Study	Research Goal (s)	Research Method (s)	Results	Conclusion
1.	Sandul Yasobant, Paramasivan Rajkumar.	Health of the health-care professionals: A risk assessment study on work-related musculoskeletal disorders in a tertiary hospital, Chennai, India	Transverse cross-sectional study.	Assess current exposure and risk of developing musculoskeletal disorders related to work among different groups of health professionals.	The study included 140 health professionals, including dentists, laboratory technicians, nurses, physicians and physiotherapists from various clinical wards at Tertiary Hospital in Chennai, India, from January to June 2013. The study was conducted in a face-to-face interview and analysis of different work tasks. Different combinations of validated and standardized questionnaires were used to collect different types of data.	Among all participants, the most commonly reported ergonomic hazards were prolonged sitting, standing, torso bending, and neck flexion, while lifting, pulling, or pushing at work and repetitive and / or strenuous work were the most common problems. Nurses, physiotherapists and dentists have reported a high incidence of all ergonomic hazards. Laboratory technicians and doctors reported the least ergonomic hazards. About half (50.7%) of the respondents reported symptoms in at least one part of their body during the past 12 months. Among them are lower back pain (45.7%), followed by neck pain (28.5%) and shoulder pain (23.5%). Elbow pain (5%) and thigh / hip pain (7.1%) were the least reported. Regardless of the regions, about 56% of nurses have complained of body aches in the last 12 months, followed by 55% of physiotherapists, 54% of dentists, 39% of laboratory technicians and 38% of doctors. 50.7% of all respondents complained of musculoskeletal pain, and work connections were found in 26.40%, which indicates that work factors are the main factors in musculoskeletal disorders related to work.	This study found a correlation between work factors and the incidence of work-related musculoskeletal disorders among health care workers, indicating that certain health care professions are at high ergonomic risk. This study found that the main ergonomic risks for physiotherapists are forward bending of the torso (100%), neck flexion (95%) and prolonged standing (85%), which is in line with the findings of previous studies. A large percentage of health experts have reported musculoskeletal disorders related to work in one or another region of the body, with the lower back being the most commonly affected area. Exposure analysis reveals that nurses are the most exposed, followed by physiotherapists and dentists, while laboratory technicians and doctors are the least exposed. We recommend that education, awareness-raising and training programs on prevention and coping strategies for work-related musculoskeletal disorders be committed to health professionals, especially high-risk groups such as nurses, dentists and physiotherapists, in order to reduce the incidence of these disorders. An integrated health promotion model should be planned for health professionals.

2.	Naveen Ganer	Work Related Musculoskeletal Disorders among Healthcare Professionals and their Preventive Measure: A Report	Scientific review of the literature.	Assess the presence of work-related musculoskeletal disorders among physiotherapists and other health professionals with ergonomic intervention.	A high percentage (61%) of physiotherapists have experienced musculoskeletal disorders related to work in at least one anatomical area. The highest prevalence of work-related musculoskeletal disorders among physiotherapists was in the following anatomical areas: lower back, wrist / arm, upper back, neck, knee, hips, and thighs. Risk factors listed by most physiotherapists who worked with a large number of patients in one day, used constant uncomfortable positions, manual therapy techniques and switched patients while providing their services in the prevention and treatment of musculoskeletal disorders.	The association of work-related musculoskeletal disorders in relation to age, gender, length of time in practice, work experience, or number of surgeries completed by health care professionals was not significant other than physical activity. In contrast, subjects with high BMI were not at greater risk for developing lower back pain than normal BMI. Recurrence of work obligations has been shown to be significantly associated with the incidence of reported discomfort in the wrist, hand or fingers, and tendinitis. Demanding work schedule, physical exposure, constant and / or uncomfortable postures, and the use of force and repetitive hand movements were considered factors for musculoskeletal disorders in surgeons.	Greater commitment to the ergonomic process in designing and evaluating work systems seems to be the most likely strategy for long-term primary prevention of these disorders and improving quality of life. In the prevention of door disturbances in work with a high frequency of visual display tasks such as radiography or sonography, attention should be paid to the work environment and to more specific aspects of workstation layout. General ergonomic modifications of behavior and workplace are recommended to reduce pain and injuries to healthcare professionals. The health of community health professionals is also on the edge. Musculoskeletal disorders related to work are quietly growing among them. Most of these issues can be prevented with three affordable things, i.e. designing an ergonomic work environment, postural education, and regular exercise.
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<p>3.</p>	<p>Tsekoura Maria, Koufogianni Andrianna, Billis Evdokia, Tsepis Elias</p>	<p>Work - Related Musculoskeletal Disorders Among Female And Male Nursing Personnel In Greece</p>	<p>Transverse cross-sectional study.</p>	<p>Investigate: (1) life, annual and weekly prevalence rates of musculoskeletal disorders related to work in medical staff, (2) perceptive risk factors for musculoskeletal disorders related to nurses and (3) gender differences.</p>	<p>From May to August 2015, a total of 300 questionnaires were distributed in 15 hospitals in Athens, Aigiou and Patras, 3 different cities in Greece. Respondents were eligible for inclusion if they had been working at their current job for at least a year. The research population consisted of both men and women. Participants (N = 300) were randomly selected from the recruitment list of hospitals invited to participate during working hours. The questionnaire developed for the study consisted of three groups of questions. The first set was about demographics (age, gender, weight, height) and information about their work routine (hours per week, years in current position). The second group of questions included the Greek validated version of the Nordic Medical Questionnaire. This questionnaire divides the human body into nine anatomical areas (neck, shoulder, elbow, fist, upper back, lower back, hip, knee and foot) and additionally includes a body chart to easily display the affected areas. The third set of questions was based on participants' personal opinions on risk factors for their disorder, days off due to work-related musculoskeletal disorders, participation in any form of exercise, participation in ergonomic training and use of physiotherapy to address their pain.</p>	<p>The sample for nurses ranges from 20 to 58 years. The share of female nurses was 80.9% (n = 182), while men were 19.1% (n = 43). The mean height and weight of the subjects were 167.6cm and 70.6Kg. The majority of respondents (44.9%) worked for 5 to 14 years, most of whom (75.6%) worked full time for 40 hours per week. The majority of nurses (62.2%) were employed in public hospitals and the remaining (37.8%) in private hospitals. Participants worked in orthopedics, pathology, neurology, respiratory, cardiology, psychiatry, pediatrics and respiratory services, as well as in emergency, dialysis and surgical units. More than eight out of ten (84%) nurses have had WMSD at least once in their professional lives. The prevalence rate of work-related musculoskeletal disorders was higher in the spine (lower back-59% and neck-56.4%), followed by biomechanically more complex peripheral joints such as shoulders (47.6%) and knees (40%). There were gender differences in the main area of neck pain and discomfort (56.4%) with a statistically significant predominance in women compared to men. Men mostly reported lumbar area (59.1%), and the difference did not reach statistical significance. The annual prevalence rate of work-related musculoskeletal disorders in nurses was 39.6% in the lumbar region, followed by the neck (28.9%) and shoulders (28.9%). The area with a lower prevalence was the elbow (7.6%). The most common areas of pain or discomfort in women were the lower back and shoulders; which were more common than men.</p>	<p>The prevalence of work-related musculoskeletal disorders is high among Greek medical staff. The highest prevalence of injuries is in the lower back, neck area, and then in the shoulders. Nurses had musculoskeletal disorders related to work at least once in a lifetime, while life, annual and weekly rates of prevalence of musculoskeletal disorders related to work were higher in the spine. This study found that Greek nurses are at risk of developing work-related musculoskeletal disorders and that ergonomic training and education intervention programs can be beneficial to nurses because they are valued as important factors in preventing musculoskeletal disorders. job. The results of this study also indicate the need for prevention programs in the hospital environment in order to control more severe musculoskeletal diseases in Greek nurses.</p>
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4.	Seyedtaghi Mirmohammadi, Jamshid Yazdani, Syavash Etemadinejad, Hanyeh Asgarinejad	A cross-sectional study on work-related musculoskeletal disorders and associated risk factors among hospital health cares	Transverse cross-sectional study.	The aim of this study was to assess the severity and prevalence of musculoskeletal disorders related to work among hospital health staff and to identify human risk factors.	Two questionnaires were used: the Rapid Exposure Test (QEC) and the Nordic Musculoskeletal Questionnaire (NMQ). QEC provides workplace assessment and equipment design, which facilitates redesign. QEC helps prevent many types of musculoskeletal disorders related to work to develop and educate users about the risks of musculoskeletal disorders related to work in their jobs. The NMQ consists of 26 questions with Section A (personal data) and Section B (work environment data).	The results of the descriptive analysis showed that 66.4% of women and 33.6% of men participated in the study as subjects (n = 110), were divided into three groups, nurse (n=61), health care staff (n = 30) and trainee students (n = 19). The subjects worked in different wards of a large public hospital. The percentage of absenteeism was high in the knees of all groups of participants and could depend on a shift in a standing position in the hospital ward or had less time for a break. There was a significant relationship between the subject body mass index (BMI) and the prevalence of work-related musculoskeletal disorders, which may relate to the body weight of the subjects examined.	The first big conclusion was about the problem in the neck and lower back in the area of the body of nurses and medical staff. The second major finding was a clear association between neck pain and lower back pain and half of the subjects, and the third was the QEC ergonomic tool suitable for assessing work / tasks in hospitals for healthcare professionals and nurses. These results showed that nurses and medical staff are more prone to work-related musculoskeletal disorders compared to male staff. This study showed that encouraging and providing ergonomic lifting devices for transfers and repositioning are more effective in controlling or preventing musculoskeletal disorders related to work among nurses and healthcare professionals. Periodic education programs, as well as the practice of "going back to school", can play a major role in the prevention and reduction of musculoskeletal disorders.
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Conclusion

1) The main ergonomic risks for physiotherapists are: bending the torso forward, flexion of the neck and prolonged standing;

2) Education, awareness-raising and training programs on prevention and strategies for dealing with musculoskeletal disorders related to work oblige health professionals, especially high-risk groups such as nurses, dentists and physiotherapists, to reduce the occurrence of these disorders;

Work-related musculoskeletal disorders can be prevented with three affordable things, i.e. designing an ergonomic work environment, postural education, and regular exercise.

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