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Review Article

Most common ergonomic injuries among healthcare workers

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ABSTRACT

In the different healthcare settings, evidence shows that healthcare workers can be exposed to various work-related hazards, which might be ergonomics, biological, psychological, and physical hazards. Work-related musculoskeletal disorders are frequently reported among the different healthcare workers, and estimates indicate that surgeons are the most commonly affected. Disorders and injuries related to the backbone, shoulders, wrist, and knees are mainly reported by healthcare workers as relevant ergonomic hazards. In the present literature review, we have discussed the commonest ergonomics that have been reported in the literature among healthcare workers. Musculoskeletal disorders as back, knee, and wrist pain are the most frequently reported among the different settings. We have also assessed the different reasons that might attribute to the development of such events, and increased workload and working hours, in addition to the harmful postures are the main reasons that have been reported in the literature. Each clinical and surgical setting might be associated with significant risk factors over others, and therefore, specific interventions should be applied within these settings to enhance satisfaction among healthcare workers. Healthcare authorities are mainly responsible to achieve this. However, further epidemiological investigations are still needed to adequately plan the righteous interventional programs.

Keywords: Ergonomics, Hazard, Risk factor, Musculoskeletal, Healthcare, Epidemiology, Back pain

INTRODUCTION

In the different healthcare settings, evidence shows that healthcare workers can be exposed to various work-related hazards, which might be ergonomics, biological, psychological, and physical hazards. For instance, needle stick injuries, and increased susceptibility to infections are considered as the main significant biological factors to which healthcare workers are frequently exposed during their work. Exposure to chemicals and noise, and slips trips

are the main physical factors that have been reported in the literature.[1] Other psychological factors also include stress, violence, and anxiety.[2] Therefore, these factors might attribute to a significant impact on the healthcare workers in the different aspects of their lives.

Work-related musculoskeletal disorders are frequently reported among the different healthcare workers, and estimates indicate that surgeons are the most commonly affected.[3] Disorders and injuries related to the backbone, shoulders, wrist, and knees are mainly reported by healthcare workers as relevant ergonomic hazards. Ergonomic hazards are significantly frequent with the healthcare workers, and therefore, the prevalence of the different musculoskeletal disorders is high among them.[4,5] Besides, estimates show that around one-third of the sick leaves among healthcare workers are attributable to musculoskeletal disorders. Investigations also indicate that these disorders are generally underreported even within the developed countries.[3] In the present literature review, we aim to shed more light on the commonest ergonomic injuries among healthcare workers.

METHODS

This literature review is based on an extensive literature search in Medline, Cochrane, and EMBASE databases which was performed on 15 September 2021 using the medical subject headings (MeSH) or a combination of all possible related terms, according to the database. To avoid missing poetential studies, a further manual search for papers was done through Google Scholar while the reference lists of the initially included papers. Papers discussing the ergonomic injuries among healthcare workers were screened for useful information. No limitations were posed on date, language, age of participants, or publication type.

DISCUSSION

Many studies have previously reported the prevalence of ergonomics and musculoskeletal disorders among healthcare workers. Furthermore, evidence indicates that these events are relatively common among the different healthcare workers in the different clinical and surgical settings as a result of the increased work-related stress. Therefore, further care should be provided to these workers to help them in their work, reduce the stress, and obtain more optimum management practices. We have identified various relevant investigations that have analyzed the effect of different tasks allowing us to study different work hazards and risk factors that might increase the risk of developing work-related musculoskeletal disorders. The different work settings will be discussed in the following section based on evidence from the different investigations and according to the different settings. In a previous cross-sectional investigation in Pakitan, Hamid et al estimated that the prevalence of muscle aches, neck, wrist/elbow pain, muscle stretching, twisting, and harmful postures were 76.5%, 56%, 67.5%, 55.5%, and 56%, respectively.[6] Furthermore, it has been estimated that chronic back pain, carpal tunnel syndrome, fracture-related injuries, hamstring pain, lifting heavy objects were prevalent among 46.5%, 27%, 22.5%, 26%, and 50% of the included healthcare workers, respectively. The reported prevalence rates among the different investigations in the literature regarding musculoskeletal disorders among healthcare workers across the different clinical settings were found to be remarkably variable. For instance, among the different studies in the literature, the prevalence of lower back pain was reported to be significantly high among healthcare workers, and some studies even reported a rate of 77%.[7-10] Other prevalence rates for different ergonomics were furtherly reported among healthcare workers in Iran. For example, a previous cross-sectional investigation reported that estimated that the prevalence of knee pain, lower back pain, and neck pain were 19.8%, 15.1%, and 9.8%, respectively among the included healthcare workers.[11] Among semi-skilled healthcare workers and nurses, evidence indicates the high prevalence of work-related injuries, especially related fractures.[12] Different studies have also introduced various causes that might attribute to the development of these conditions in the different clinical settings. Some of these causes might include prolonged standing at work, static and awkward postures, increased frequency of lifting heavy objects manually, and handling of patients.[13,14]

There has been a significant correlation between the nature of occupation and the type of the working healthcare facility, and the different types of musculoskeletal pain. Working in multiple healthcare facilities, increased frequencies and duration of shifts per day, and working overtime has been reported to be significantly associated with the increased risk of developing musculoskeletal disorders among healthcare workers and increased exposure to the different healthcare-related ergonomic hazards.[6,12,15] This has been furtherly indicated in a previous comparative investigation that included nurses that were either involved in full or part-time shifts. The authors concluded that nurses that were involved in the part-time shifts significantly had less frequent work-related fractures and injuries than those that were involved in full-time shifts.[16] Prolonged and increased physical activities and increased factors that might impact the work-related stress among healthcare workers are also other factors that are considered to attribute to being more exposed to developing work-related musculoskeletal disorders among healthcare workers.[11,13] The presence of biological and physical hazards can also significantly add to the significant or the different risk factors that can precede the development of the different musculoskeletal disorders.[17,18] Lack of protective measures can also contribute to the different etiologies and can also increase the rate of the significance of the different factors.

To evaluate the different work-related ergonomics among the different work settings, including those related to the field of healthcare, many assessment tools have been proposed. Among these methods, the Ovako working

posture assessment system (OWAS) has been commonly reported among the different investigations as a reliable tool to adequately assess the risk of musculoskeletal disorders among different work settings. In surgical settings, many previous investigations have used the OWAS tool to assess ergonomics among the different personnel in this department, including surgeons, nurses, and nurses' aides, especially personnel working within the ear, nose, and throat surgical settings. In general, it has been concluded that these healthcare workers are usually exposed to significant harmful postures.[19] In a previous investigation by Kulagowska et al, the authors investigated the presence of different work-related harmful postures among nurses during anesthesia settings.[20] It has been concluded that task organization was mainly responsible for developing the reported musculoskeletal disorders among these nurses. Following this report by one year, another investigation by Kulagowska et al that was conducted in the surgical settings also reported similar findings to the previous investigation.[21] Among the findings of previous investigations, authors also evaluated the harmful postures that are related to the emerging techniques regarding the novel surgical modalities that have been associated with surgeries of the knees, hips, and spinal column. The authors used the RULA method (which assesses the musculoskeletal disorders mainly in the upper limbs, in addition to the lower back and shoulders) in addition to the OWAS tool for the assessment of these purposes.[22,23] In the same context, another investigation by Bartnicka et al also evaluated the presence of musculoskeletal disorders among surgical settings using various assessment tools, including the OWAS tool, which allowed for a favorable assessment of the methodology among the different tools.[24]

Using the OWAS, work-related postures were also previously analyzed among ophthalmologists, and according to these scores, recommendations were reported to enhance these postures and enhance the work-related environment to these workers.[25] It is worth mentioning that the OWAS tool has been widely used within the nursing field, and was commonly reported among various investigations probably more than other healthcare-related fields. In this context, a previous investigation by Engels et al has assessed the work-related ergonomics among nurses working in the urology and orthopedics departments and found that among the included nurse, most of the adopted postures among these nurses all of the day were considered harmful.[26] In another investigation that was published a year after this study, Hignett et al reported similar findings using the same assessment methods.[27] However, the authors also used computer software to further reduce the time taken to analyze the results and interpret the data. In geriatric-related healthcare settings, previous studies were also established to assess the levels of musculoskeletal disorders among nurses working in these departments.[28] It has been reported that strained postures were commonly reported among the included nurses, which has been attributed mainly due to the increasing frequency of tasks of moving patients to different places. Other investigations have also assessed the effectiveness of training courses among nurses and studied the impact among nurses before and after them.[29,30] It has been demonstrated that the frequency of harmful events was significantly reduced among these workers after attending these courses. Other investigations also aimed to assess the reliability of the OWAS tool among other different methods to adequately evaluate the different postures observed among nurses.[31] Another comparative investigation was also conducted by Stricevic et al that investigated whether the postures of their included nurses were impacted when mechanical equipment was used or not.[32] The findings from this investigation indicate that the frequency of strain postures was significantly reduced among the included population in cases when mechanical equipment was used. Other investigations have also used the OWAS tool and other questionnaires to assess the presence of ergonomic injuries among midwives during childbirth. It has been demonstrated that incorrect postures were significantly associated with back pain among the included midwives.[33] Studies of nurses in the field of ophthalmology were also found in the literature, where it has been indicated that short-term corrective activities were significantly associated with adopting bad postures among these nurses. This was also indicated in an epidemiological investigation that used the OWAS tool, and other computer software tools.[34] In a nursery school, a previous study used the OWAS tool together with the Brog scale and the MSD questionnaire to assess the effect of ergonomics and associated injuries among the included population. Unver et al demonstrated that during meal supervision and play activities, the frequency of strain positions was found highest.[35] Another investigation also evaluated nursery teachers to find that leaning laterally, bending strain positions, trunk rotation were prevalent among their population, although most of them were standing during teaching activities.[36] In ambulance workers, a previous investigation analyzed the impact of the workload using a biochemical analysis and other related questionnaires to the ergonomics and risk factors in the work settings.[37] It has been demonstrated that various harmful postures were reported among this personnel, and during an emergency setting, the most serious postures were observed.

In physical therapy, previous investigations also used the OWAS tool and other methods to assess these workers suffer from work-related ergonomics or not.[38] Folding and unfolding of the wheelchairs were the main tasks that were evaluated in the literature. It has been demonstrated that work-related musculoskeletal disorders were significantly associated with the adopted postures among the included healthcare workers. In the radiology settings, various investigations were published to assess the prevalence of the different ergonomics among the related healthcare workers that are involved in these departments. Among the included investigations, the RULA, Corlett, and OWAS scales were used to assess the presence of any potential work-related musculoskeletal disorders.[39] As a result of the strained positions that were adopted by the included

healthcare workers in this setting, it has been reported that the prevalence of musculoskeletal disorders was reportedly significantly high. Furthermore, different relevant investigations have demonstrated that burnout syndrome might be associated with the affected patients as a result of the increased burden of the different work-related ergonomics without the application of adequate interventions among these patients.[40-43] This can significantly impact the satisfaction and quality of life of the affected healthcare workers, which can consequently impact their productivity during working hours. Therefore, healthcare authorities should exert further efforts to overcome these issues and enhance the quality of work to the healthcare workers at the different settings to increase the quality of care and increase satisfaction among these workers.

CONCLUSION

Musculoskeletal disorders as back, knee, and wrist pain are the most frequently reported among the different settings. We have also assessed the different reasons that might attribute to the development of such events, and increased workload and working hours, in addition to the harmful postures are the main reasons that have been reported in the literature. Each clinical and surgical setting might be associated with significant risk factors over others, and therefore, specific interventions should be applied within these settings to enhance satisfaction among healthcare workers. Healthcare authorities are mainly responsible to achieve this. However, further epidemiological investigations are still needed to plan the righteous interventional programs adequately.

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