

Work related musculoskeletal disorders among radiologists and radiographers

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Abstract. The aim of the systematic review was to review the current literature in order to know various measurement tools used, ergonomic risk factors and other findings related to work related musculoskeletal disorders among radiologists and radiographers. A review of literature was done using MEDLINE by the keywords "radiologists," "radiographers", "sonographers", "ergonomics" and "musculoskeletal disorders". All the articles were reviewed by two reviewers and studies which were not adequate and inappropriate were excluded. Study design, type of data collection, assessment tools and outcomes obtained in the respective study were noted. Results: Back pain is one of musculoskeletal disorders most commonly experienced by radiographers and radiologists. A prevalence of 72% and 77% of low back pain was found among male and female radiographers, respectively. Ergonomic equipment and education are provided by application specialists, but the incidence of WRMSD appears to be prevailing.

Keywords. Radiologists, Ergonomics, WRMSD, risk factors.

1. Introduction

Work related musculoskeletal disorders (WRMSD) are common in healthcare professionals. A radiographer's task includes preparing the patients for the radiologic examination, positioning and immobilising them on examination table, positioning radiographic equipment over the appropriate area of patient's body, and developing films. Thus, work tasks performed by the radiographers frequently involve manual handling of patients and materials. Radiologists spend long hours studying radiographic films and typing reports on a computer. Surveys done among American and Canadian sonographers in 1997 showed an 84% incidence of WRMSD; however, this incidence had increased to 90% by 2008 (Baker et al., 2013). The aim of this study was to review the literature to find out the prevalence, risk factors and interventions for WRMSD among radiologists and radiographers.

2. Methods

A systematic review of the published literature was conducted to find out the ergonomic risk factors among the radiologists, sonographers and radiographers and suggested recommendations regarding prevention of WRMSD. The literature search was done using MEDLINE by the advanced search and articles were found using the keywords "radiologists", "radiographers", "sonographers", "ergonomics" and "musculoskeletal disorders". The limits were set for all the articles, published in the years from 1995 to 2013. A total of thirteen articles were found and 11 articles were selected for review by two

independent reviewers and studies which were not adequate and inappropriate were excluded.

3. Results & Discussion

In the available literature, WRMSD among sonographers were more studied than other radiographic work. Most of the studies were of survey type and the commonly used measuring tools were self reported questionnaires. Overall the prevalence of WRMSD among radiographers and radiologists was found to be more than 70% (Baker et al., 2013; Rosso et al., 2002; Kumar et al., 2003; Roll et al., 2012). The review analysis indicated that manual handling was a risk factor for musculoskeletal symptoms among radiographers (Kumar et al., 2003) Among the healthcare professionals radiologists have a comparatively lesser prevalence of WRMSD which can be attributed partially to less number of radiologists at work compared to other medical professionals who are comparatively more in number in the hospital setup. The most commonly affected area was the lower back, with a prevalence of 72% and 77% among male and female radiographers, respectively. This was followed by shoulder pain and neck pain. This is attributed to hazardous posture and faulty body mechanics during manual material handling during the course of their work (Baker et al., 2013). Some of the common incorrect movements performed by the radiographers includes carrying cassettes on the hip, which puts load on one side of body and imparts torsional strain on the spinal muscles, lifting patient by one radiographer with arms and legs in straight position, and bending from their waist with straight legs to take an object from the floor. Other common biomechanical risk factors for WRMSD are force or pressure used while performing and ultrasound scan, repetition of movements, sustained isometric contraction, long reaches and inefficient grips.

4. Conclusion

Further research, including randomized trials, with education and ergonomic interventions are needed to prevent WRMSD among radiologists and radiographers.