

Safety In Mines Research Advisory Committee

Project Summary: Health 702

Project Title:	A prospective study to assess the prevalence and work-related risk factors in the development of musculoskeletal disorders in the South African mining industry (1 volume, 193 pages)		
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Category:	Health and Safety	Applied Research	Occupational Medicine and Occupational Hygiene

Summary

The objective of the study was to assess the prevalence of work-related musculoskeletal disorders (WMSD) in the South African mining industry and to identify work-related factors that may pose a risk of WMSD developing. Aspects covered in the project report include the findings of a literature review dealing with WMSD; the results of a retrospective record review of WMSD; the results of a prospective study to determine the prevalence of WMSD; the identification of work categories and tasks that pose a risk of WMSD; and, finally, recommendations for controlling or reducing the risk of WMSD. Three mines were used as project mines: one gold mine, one platinum mine and a colliery.

Conclusions

The platinum mine had the highest WMSD prevalence rate (3,4-18,2%), followed by the colliery (7,4-8,4%) and then the gold mine (2,1-5,2%).

From the results obtained in the study, there is evidence of different musculoskeletal presentations at the different mines. At the gold mine backache is by far the most common presenting musculoskeletal complaint (82,1%). At the platinum mine and the colliery the corresponding figures were 37,8 0% and 66,2% respectively. Back complaints at the gold mine were followed by complaints of pain in the hip region (5,5%) and the foot region (4,6%). At the platinum mine the second highest number of complaints was for knee pain (17,%), followed by ankle pain (9,%), and neck pain (9,1%). At the colliery neck pain (13,5%) and foot pain (8,1%) were also common presentations.

The results of the ergonomics assessments conducted indicated that many of the known musculoskeletal injury risk factors, usually in combination, are associated with the typical mining tasks. Risks factors identified included awkward body posture, manual material handling, repetitive motions, force and vibration. Of these, working in an awkward posture and manual material handling are considered to be the major risk factors.

Recommendations

There is no universally agreed classification for WMSD that could be used for surveillance. The Southampton

examination schedule for the diagnosis of MSD of the upper limb used in the present study is repeatable and gives acceptable diagnostic accuracy in a hospital setting. If the planned further analyses of results obtained in this study show a similar finding, it is recommended that this examination schedule be considered for use in an industrial setting such as mining. It could become an important tool to assist primary health care nurses, as well as occupational health care nurses, to make a diagnosis of MSD.

In view of the importance of the identification and treatment of WMSD, it is recommended that a series of workshops be organised (under the auspices of SIMRAC or any suitable institution) to assist occupational health personnel on mines to build expertise in WMSD diagnosis, treatment, rehabilitation and return to work.

The implementation of ergonomically sound interventions in the workplace has the potential to reduce the risk of WMSD. However, in view of the large variation in the mine worker population's body dimensions and mechanical work capacity, as well as technical and physical constraints in the mining environment, it is not always possible to accommodate all individuals, especially when manual material handling is involved. It is therefore recommended that the selection of workers on the basis of functional biomechanical strength capabilities, as well as appropriate worker training, be considered as components of a comprehensive plan for preventing musculoskeletal injuries.

Due to the uniqueness of the workplace on mines, generic solutions will not necessarily fully address ergonomics-related risks at all mines. It is therefore recommended that mine-specific ergonomics programmes be considered as a method for the introduction and implementation of ergonomics programmes in the workplace at mines. Information dealing with the important aspects of an ergonomics programme and its implementation is contained in SIMRAC Report GEN 603.