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Integration of musculoskeletal disorders prevention into management systems: A qualitative study of key informants' perspectives

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ABSTRACT

Introduction: Musculoskeletal disorders (MSD) constitute a substantial fraction of workplace injuries and can result in costs to employers, workers, and societies as a whole. MSD prevention programs disparate from wider organizational approaches can be costly, ineffective and unmaintainable.
Objective: This study examines key informants' perspectives on the integration of MSD prevention programs into management systems as a solution to issues associated with isolated or separate program.
Method: Seven Health & Safety (H&S) consultants, five H&S managers, five researchers, three policy makers, and three labour representatives were interviewed on this topic. A thematic analysis approach was used to code and analyze the data from the key informants' interviews.
Results: The participants consistently suggested that a disconnect of MSD prevention strategies from management system frameworks can lead to inadequate attention and ineffective prevention policies. Integration of MSD prevention into management systems was highly supported. Incorporating MSD hazard identification and assessment into tools such as Failure Mode Effects Analysis, Job Safety Analysis, decision making tools, and Kamishibai and Ishakawa (for Lean) was suggested to improve MSD prevention.
Contribution: This study gives expert insight into challenges associated with MSD risk factors as well as solutions regarding current approaches to MSD prevention and effective tools for implementation.

1. Introduction

Musculoskeletal disorders (MSD) constitute a substantial fraction of workplace injuries and can be costly for both employers and workers. Not only are effective tools and processes required to be in place for MSD prevention, but management commitment and recognition of these disorders must also be present. MSD can be caused or aggravated by many workplace factors. Consequently, identification of MSD hazards and a focus on control and prevention strategies is critical for a proactive approach.

Currently, MSD prevention is approached via an MSD prevention program and is separate from other organizational management systems such as a Quality Management System (QMS), or an Occupational Health and Safety Management System (OHSMS). Due to their disconnected nature, these 'silos', or projects, are largely unmaintainable and can be costly in terms of financial, human and other resources for the organization, and have been discussed as "organizational side-cars" (Neumann & Village, 2012). As a separate program, they are often overlooked and poised to receive cuts during financial downturn. Furthermore, they are difficult to implement since they do not make use of the existing management systems that the company has in place. As seen in Fig. 1, current practices for MSD prevention activities are often limited to short-term projects to address a specific issue or a program consisting of multiple projects. These projects and

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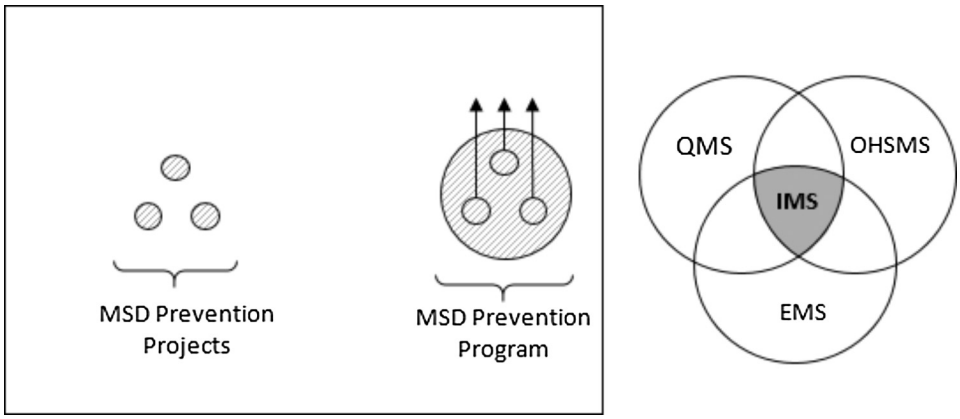

Fig. 1. MSD Prevention is often a separate and isolated program or is addressed via projects in current practices.

programs generally stand-alone and isolated from the main business structure and the way that organizations address other issues including quality, general health and safety, and environmental issues (Environmental Management System), often referred to as an Integrated Management System (IMS).

1.1. Background of the study

The scientific literature suggests that the integration of MSD prevention into wider organizational approaches, including continuous improvement should result in better prevention of MSD (Caroly et al., 2010; Lewandowski, 2000; and Matias, & Coelho, 2002). Management systems (MS) are a collection of policies and procedures, which directs the management of a category of issues within a company (Autenrieth et al., 2016). MSD prevention was reported to benefit from integration into OHSMS (Yazdani et al., 2015b), QMS (Cocianni & Williamson, 2008), and design processes (Imbeau et al., 2001; Hendrick & Kleiner, 2002), so this may result in promoting ergonomics, in general, as a part of "everybody's tool" (Chung et al., 2005). Despite a small range of peer-reviewed literature on the integration of MSD prevention into management systems, the literature supported the concept of incorporation and suggested that it could potentially improve production as well as preserve workers' health in workplaces (Yazdani et al., 2015b; Neumann & Dul, 2010). Often, Participatory Ergonomics (PE) are implemented as prevention program to prevent workplace injuries in isolation from other business drivers that may result in creating stand-alone programs (Yazdani et al., 2015a, 2015b). Recent research by Yazdani et al. (2015b) in this area revealed that despite some evidence of success, PE processes and language are often incompatible with business practices and processes. However, MSD prevention approaches such as PE could be integrated into existing management structures to benefit from resources available through these management systems, as there was no inherent conflict between the two (Yazdani et al., 2015b). In addition, MSD risk assessment tools and techniques seem to be partially outside of main management process due to their complexity. This may result in MSD prevention not being "on-the-table" and it may not receive enough attention (Yazdani et al., 2015b).

Implementation of management systems has many advantages for a company. These systems organize and focus company resources, improve performance (Hamidi et al., 2012), and increase market competitiveness (Bernardo, 2014). The literature suggests that management systems for health and safety are effective at reducing costs and injury rates, and can also enhance the organization's image, reputation, productivity, innovation, safety climate, safety performance, and reduce the cost of accidents (Battaglia et al., 2015). Implementation of OHSMS is reported to be an efficient way to use organization resources, and positively influence health and safety as well as employees' attitudes and the company's competitiveness (Battaglia et al., 2015). In addition, an OHSMS also allows for the inclusion of OHS issues in the overall structure of company management (Battaglia et al., 2015). This demonstrates that the inclusion of health and safety issues is effective within a management system and would be useful for MSD prevention.

The current model for MSD prevention, where MSD prevention is addressed independently from other health and safety issues and company directives, is comparable to having several separate management systems. The individual use of multiple management systems has an inherently lower level of efficiency; may increase time, cost, personnel, and confusion; and, results in sub-optimal performance (Asif et al., 2013). Rebelo et al. (2016) also notes that separate systems can be counterproductive, create bureaucracy and are difficult to manage. An integrated management system (IMS), where the facets of multiple MS are fully or partially integrated into a singular encompassing management system, is one solution to these problems (Yazdani et al., 2015b).

Integrated management systems optimize the value of management systems in conjunction with reducing the amount of individual MS. Benefits of IMS are widely reported in the literature (Asif et al., 2013; Bernardo et al., 2015; Jorgensen et al., 2006; de Oliveira, 2013; Rebelo et al., 2016), and IMS are generally described as optimizing organizational resources, reducing costs and improving performance. Strategically, an IMS provides a structure to acknowledge the demands of stakeholders and efficiently directs the use of resources, while at the operational level it integrates work instructions, work activities and other supporting activities (Asif et al., 2013). As stated by Jorgensen et al. (2006), an IMS results in the reduction of administrative burdens, improved competitive position, internal coordination, corporate responsibility and sustainability. Bernardo et al. (2015) reveals that integration of MS leads to numerous benefits, both internally and externally for the organization, in areas such as global organization, human resources, performance, market share, stakeholder relations and audits. Studies support that the incorporation of health and safety management systems into an integrated management system compounds its benefits and effectiveness (Autenrieth et al., 2016; Bernardo et al., 2015; Hamidi et al., 2012). In 2016, a study by Autenrieth et al. found that an IMS system, which integrates OHSMS with other systems, led to reduced injury rates and improved production and quality. Another study in 2012 by Hamidi et al. reviewed safety indices of organizations before and after the implementation of an IMS (QMS, EMS and OHSMS). The study found that implementation of an IMS decreased the number of accidents and improved employee attitudes and workplace safety culture (Hamidi et al., 2012). A study by Zhao et al. (2016) using cutting-edge information technology such as mobile virtual reality (MVR) will increase worker's safety practices resulting in improved safety culture. The integration of health and safety issues into an IMS is a successful method of injury prevention. Most companies already have MS or IMS in place and, as such, these present a structure for the organization of company resources, which would work well for the