A cross-sectional study of factors influencing occupational health and safety management practices in companies

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1. Introduction

1.1. Occupational health and safety management

Companies are obliged to manage risks and hazards in the workplace in order to protect human health and safety (OSH Act, 1970; SFS, 1977; 89/391/EEC). Risks need to be systematically assessed, analyzed, and corrected. If a risk cannot be corrected right away, an action plan must be established and later followed up upon. Companies differ in how successful they are in achieving a functioning systematic occupational health and safety management (OHSM) system (Duijm et al., 2008; Nordlöf et al., 2015b). Functioning OHSM practices in companies save lives and protect health in organizations all over the world (Arocena and Nunez, 2010). Swedish national data suggest that about 50% of companies differ depending on directionality. Practical implications for industry and future research are discussed. © 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Facts about which sufficient or not. There are shared values and norms (culture) among humans that are learned through socialization in the workplace (Cialdini and Trost, 1998; Giddens, 1989; Mullen, 2004). Culture is, however, one out of several factors that influence behavior (Myers et al., 2014). The aspect of culture at a workplace that concerns health and safety, risks and hazards, is hence called safety culture (Antonsen, 2009; Nordlöf et al., 2015a). Earlier research has linked safety culture to accidents and safe/unsafe behavior (Brown et al., 2000; CAIB, 2003; IAEA, 1992; Watson et al., 2005), and safety culture is assumed to be associated with OHSM practices in companies, but this needs to be investigated further to establish a relationship (Cox et al., 1998; Fernández-Muñiz et al., 2007a; Goldenmund, 2010). Safety culture in organizations has previously been studied using questionnaires (perception surveys), or with qualitative and ethnographic methods, as well as by investigating accidents (Hopkins, 2006). To date, several different safety culture questionnaires have been employed in research and organizational development (Choudhry et al., 2007; Hopkins, 2006). Furthermore, a consensus has started to form around which primary factors (indicators) of a positive or negative safety culture are the most relevant (Choudhry et al., 2007; Frazier et al., 2013; IAEA, 2002; Walker, 2008), for example, management commitment, employee involvement, risk acceptance, and productivity pressure.

1.3. Financial performance

There is potentially a multitude of factors in companies that may be associated with functioning OHSM practices (Arocena and Nunez, 2010; Hasle and Limborg, 2006). Company size and safety culture could be two, as discussed above, and financial performance of companies could be another.

Financial performance of companies is often assumed to be associated with OHS adjustments in the workplace in general (Kelloway and Day, 2005; Rose et al., 2013; Salminen, 1998; Tompa et al., 2010), and sometimes to OHSM practices in particular (Larsson et al., 2007). The assumption is that if humans operate in a good work environment that is safe, healthy, ergonomically sound, creative, and so on, these beneficial factors will be reflected in the financial performance of the company. It is not easy to demonstrate such a relationship, and the direction of causality could be debated: Do already financially prosperous companies more easily designate resources for a functioning OHSM, or do OHSM investments/costs pay off in a manner that serves the ability of the whole organization to achieve more profits? Both scenarios could be accurate, and the chain of causality may be cyclical.

Earlier studies have, it seems, not explicitly investigated the possible association between financial performance of companies and OHSM practices as outcome.

1.4. Research focus and aim

To protect human health and safety in the workplace, it is essential that companies handle risks and hazards systematically; still, many companies struggle to achieve the requirements. It is important to better understand which factors play a part (and to what extent) in functioning OHSM practices.

The aim of this study was to investigate different factors (e.g., company size, safety culture, and financial performance) that may influence occupational health and safety management practices in companies.

2. Methods

2.1. Study design

This study has a cross-sectional design, and data were collected with a postal questionnaire sent to manufacturing companies with 10 employees or more, in a Swedish county. Questionnaires were to be answered by one manager and one safety delegate per company. Complementary data concerning the companies were retrieved from a credit bureau database (UC.se, 2015). The statistical analysis was performed with ordinal regression analysis using generalized estimating equations (GEE).

2.2. Measures

2.2.1. OHSM practices

No generally established instrument to measure OHSM practices was found when reviewing the literature. We therefore designed this measure by reviewing legislation and earlier studies, and extracting from them the essentials of OHSM (e.g., AFS, 2001; Battaglia et al., 2015; Fernández-Muñiz et al., 2007b; SFS, 1977; 89/391/EEC). We formulated 13 items regarding different OHSM practices, which were to be answered with yes/no/don’t know (Appendix). The items were together calculated as a joint index by summing the number of yes answers to produce the outcome variable OHSM practices.

2.2.2. Safety culture

Safety culture has been investigated with questionnaires in several earlier studies (Choudhry et al., 2007; Hopkins, 2006). In our survey of the literature we uncovered no safety culture instrument that effectively produces one global safety culture measure for analysis. We therefore decided to formulate items on primary factors for safety culture that together formed an index to use as a predictor variable. By systematically going through literature and earlier questionnaires, we found 13 primary factors that are most commonly used to indicate the state of safety culture in an organization (e.g., Antonsen, 2009; Choudhry et al., 2007; Frazier et al., 2013; IAEA, 2002; Nordløf et al., 2015a; Ostrom et al., 1993; Walker, 2008). We then formulated items, expressed as statements, for each of the primary factors (Appendix). The items were to be answered using a Likert-type scale with the alternatives yes, absolutely/yes, partly/no, not really/no, not at all.

2.2.3. Work environment priority

To measure perceived priority of the work environment we used items developed by Nordløf et al. (2012). In that study 42 items were used to measure a broad spectrum of primary factors related to perceived work environment priority in companies, which formed seven different indexes. To reduce the number of items in the questionnaire, we reformulated the seven indexes into seven items to use in this study. The items were written as statements and were to be answered using the same Likert-type scale as used for the safety culture items (Appendix). The seven items were together calculated as an index in order to produce the predictor variable work environment priority.
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