

Workplace Hazards Difficult to Identify and Manage

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Abstract. Hazard identification (HI) and risk management (RM) are key procedures in occupational safety and health promotion at workplaces. Previous research has reported difficulties in HI and RM at workplaces. To improve the effectiveness of RM, this study charts hazards that are considered difficult to identify or manage at workplaces. Interviews (n = 46) were carried out in four large-scale manufacturing and facility services companies. The interviewees often mentioned psychosocial hazards, hazards due to exceptional circumstances, familiar and obvious hazards, and hazards of the shared workplaces as difficult to identify or manage. The reasons these hazards were difficult to identify or manage varied from lack of knowledge and competence to problems in communication and safety culture. Certain hazards receive less attention than they should because they were considered difficult to deal with. Further studies on the successful measures to manage these risks are needed.

Keywords: Hazard identification · Occupational safety and health · Risk assessment · Risk management · Workplace safety

1 Introduction

As a part of the risk management (RM) process, hazard identification (HI) and risk assessment (RA) are key procedures in managing occupational safety and health (OSH) at workplaces. In Finland, the Risk Assessment in Workplaces Workbook [1], published by the Ministry of Social Affairs and Health, provides guidance for carrying out OSH-related RA and is widely applied in workplaces. However, the workbook contains more detailed guidelines concerning some RM areas than others. For example, the implementation of risk controls and the utilization of RA results are covered less comprehensively than HI [1].

In previous research, difficulties in identifying hazards and the utilization of RA results in OSH management have been reported. Some studies have reported that a considerable number of hazards remain unidentified [2-3]. Poor hazard recognition is often reported as one of the major reasons for accidents [4]. Previous research has also suggested that some hazards (e.g., trivial hazards, emerging hazards, and hidden hazards) are more difficult to identify than others (e.g., obvious hazards) [3]. Moreover, there is usually subjectivity in HI and RA. Inadequate HI hinders proper hazard management [5].

The recent OSH promotion activities have not had desired results in Finland and only slightly decreased development can be seen in accident statistics [6]. To ensure favorable progress, a better understanding of the problems encountered by workplaces while carrying out HI and RM is needed. The aim of this study was to chart the kinds of hazards that are considered difficult to identify or manage in workplaces. We discuss some reasons for the difficulty in identifying or managing these hazards.

2 Materials and Methods

The objectives of this study were explorative and descriptive in nature. Hence, a qualitative approach [7] and a case study [8] were employed as a research strategy. Consistent with the methodological approach, data for this study were collected with interviews from four case companies that participated in the study.

The participating companies were all large-scale companies. The revenue of the companies varied between 70 and 420 million Euros, and the number of personnel was between 250 and 7900 persons at the time of the study. Three of the companies were from the manufacturing industry and one from the facility services industry. The companies were chosen based on their concrete need and interest to develop their risk management practices. All the companies were part of an international or larger Finnish corporation. However, the study focused on Finnish operations and on manufacturing companies in one factory or production facility. The RM practices of the companies were based on the Risk Assessment in Workplaces Workbook [1], published by the Ministry of Social Affairs and Health. The Workbook provides basic guidelines in OSH-related RM for workplaces, and it is widely applied in Finland. The implementation of the Workbook at the companies was described in more detail in Nenonen et al.'s study [9].

The data for the study was collected by interviewing personnel involved in RM at the participating companies. A total of 46 interviews were carried out, and 56 persons were interviewed between March and May 2017. The details of the interviews and interviewees' background are summarized in Table 1. The interviews were directed at personnel involved in RA. The selection of the interviewees was conducted with the companies' contact persons, such that the interviewees had varied but at least some RA experience.

Table 1. Background information of the interviews (n = 46) and interviewees (n = 56).

Interviews per company	Company A (35%), Company B (22%), Company C (22%), Company D (22%)
Percentage of interviewees	Company A (34%), Company B (18%), Company C (29%), Company D (20%)
Interview medium	Face-to-face interviews (63%), phone and Skype interviews (37%)
Interview type	Individual interviews (80%), group interviews (20%)
Duration of the interviews	Average 48 minutes, range 23–86 minutes
Role of the interviewees	Manager or supervisor (27%), OHS representative (27%), employee (21%), HS or HR manager or specialist (16%), occupational health service representative (9%)

The interviews were semi-structured. The themes and questions were considered in advance, but the order and form of the questions could vary, and additional questions were asked as needed. In addition, the questions varied according to the background of the interviewee. The interview questions were drawn up based on initial meetings with the companies, research questions, and the steps involved in the risk management process. The purpose of the interviews was to find out how risk assessment and management were being practiced, and what good practices and development needs relating to RA have been identified by those who participate in RA. The interview questions included, for example, questions such as: What kind of OSH-related hazards are there at your company? Are some hazards difficult to identify or manage? Do some hazards receive less attention than others? Which hazards and why? Which hazards are easy to identify and why? All interviews were recorded and transcribed. The results of the interviews were categorized according to the themes that emerged.

3 Results

The interviewees indicated that hazards that need attention often and concrete and visible hazards were easiest to identify. These hazards included, particularly, accident hazards and physical hazards, such as hazards related to noise, temperature, and lightning. The interviewees gave such examples as slipperiness, hazards related to stairs and moving machines, visible risk of falling from high and deficiencies in protective equipment. Some interviewees mentioned that hazards related to chemicals were easy to identify.

The interviewees mentioned several types and examples of hazards they perceived as difficult to identify or manage. Table 2 provides a summary of these hazard types with examples. The interviewees often mentioned hazards that are difficult to perceive by senses, psychosocial hazards, hazards that are related to the way work is carried out, and hazards that are familiar and obvious or are considered part of the work. As hazards that are difficult to identify, the interviewees emphasized, particularly, hazards due to exceptional circumstances, hazards of the shared workplaces, hazards that are related to the way work is carried out (e.g., not following safe work procedures), and hazards related to changes in the work environment. Psychosocial hazards were considered both difficult to identify and manage.

Many of the hazards mentioned in the interviews had been recognized in the companies at some level. However, the interviewees pointed out that some of these hazards (e.g., hazards related to chemicals) should be more actively recognized and realized in day-to-day operations. Other hazards that often received less attention included familiar and obvious hazards, hazards that were perceived as minor, and hazards for which prevention or control measures were difficult to devise. A couple of the interviewees were of the opinion that all hazards could be identified, or they could not name any hazards that would be difficult to identify or manage.

Table 2. Hazards difficult to identify or manage or being given less attention.

Category	Examples
Psychosocial hazards	Feeling of inadequacy, bullying, harassment
Hazards related to exceptional situations	Machine or production line malfunctions
Familiar and obvious hazards	Slipping and stumbling, going up and down on the stairs, forklift traffic
Hazards at the shared workplaces	Processes, chemicals and machines used by other parties operating at the shared workplace
Hazards considered as part of the work	Minor faults in equipment, work assignments with no previous requirements for protective equipment
Hazards related to changes in the work environment	New machines, removed stairs, new gap or shaft
Hazards related to the way work is actually carried out	Not following safe working procedures when in a hurry
Hazards that are difficult to manage	Lone working in the nighttime, traffic, lack of space, coping with work
Joint effects of different hazards	Joint effects of different chemicals and substances, the impact of haste or fatigue on working methods in exceptional situations
Hazards that are difficult to perceive by senses	Chemicals, gases, mold, dust
Hazard with related risk perceived to be minor	Moving around on the stairs, using ladders, poor working postures
Other hazards	Work tasks carried out occasionally, slips when using tools

Lack of knowledge and competence were often mentioned as a reason why some hazards were difficult to identify and manage. In particular, hazards that are difficult to perceive with senses, psychosocial hazards, hazards that are perceived as minor hazards, and hazards related to exceptional situations or changes in the working environment were mentioned with regards to knowledge and competence. For example, the identification and management of hazards related to chemicals require previous knowledge about their properties. Further, some personnel were not always aware of what psychosocial hazards are or that poor ergonomics could cause health problems (because the problems may not rise immediately), and that these issues should be reported. Moreover, the interviewees pointed out that previous work and RA experience can help to recognize, for example, risks related to new machines and possible malfunctions. The interviewees also mentioned that it was difficult to think of hazards related to exceptional situations and that they may lack knowledge of how these situations proceed if they have not occurred previously.

Moreover, the interviewees emphasized the role of communications and safety culture in successful hazard identification and management. They mentioned that it was sometimes difficult to obtain information about psychosocial hazards and hazards that are related to the way work is carried out in practice. The interviewees further explained that people were not always willing to inform others about psychosocial issues or if safe working methods were not followed, or sometimes they were not even aware that these issues should and could be reported. These issues might be more easily reported in an anonymous questionnaire or confidential discussion with occupational health personnel

than in a face-to-face RA situation. The identification of the hazards in the shared workplaces is difficult because of the challenge in obtaining all necessary information about all processes and operations going on in these premises. With regards to the safety culture, the interviewees also indicated that there could be resistance in using personal protective equipment (PPE) if the hazard is familiar and the PPEs were not previously required in the same work assignment. Moreover, particularly small changes (e.g., removed stairs) in the work environment are easily missed when in a hurry and if the culture of the workplace nourishes the idea of quick results over safety.

4 Discussion

The fact that the interviewees were able to recognize problems in hazard identification and management indicates that there was RM competence at the workplaces in this study and that these issues were considered, and the workplaces were willing to develop their RM practices. However, the results also showed that the identification and management of several types of hazards were considered challenging by these workplaces. Moreover, certain hazards received less attention than they should because they were considered difficult to identify and manage.

In congruence with previous studies, it was found that hazards related to psychosocial risks [10], hazards that are difficult to perceive by senses [10], hazards of the shared workplaces, hazards related to changes in the work environment [11], and hazards related to the way the work actually is performed (compared to how it is instructed to be carried out) [12-13] were considered difficult to identify or manage. The increased importance of and general attention to psychosocial hazards and related risks [14] can be seen in the results of this study, as exemplified by the heightened mention of this hazard category in the companies that participated in this study. Nevertheless, the interviewees felt they lacked the expertise to be able to deal with these issues. A great deal of attention was paid to hazards typical of the manufacturing and facility services industries and reduction of associated risks in the companies. Nevertheless, many of these hazards were still regarded as difficult (e.g., new machines, machine malfunctions) or requiring more attention (e.g., chemicals). RM is an ongoing project, and even familiar hazards require continuous attention.

The reasons why these hazards were difficult to identify or manage varied from lack of knowledge and competence to problems in communications and safety culture. Previous studies have suggested that training can improve the identification of hazards [2-3, 11, 15]. Successful identification and management of hazards require competence and cooperation. Some studies have discussed limitations in coverage, generalizability, and dynamism of hazard recognition methods, which can hinder the success of HI.

This study has some limitations, including collecting data from only four companies that represented manufacturing and facility services industries. Further studies are needed to discover possible similarities and differences in HI and management among different industries. Moreover, the results of this study are based on the perceptions of those involved in the HI and RM at the workplaces surveyed. The findings from this study could be further verified using, for example, data, and documents related to RM and accidents occurring at the workplaces. Nevertheless, more information is still

needed on the successful measures to manage risks receiving inadequate attention to improve the effectiveness of the RM process.

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