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Perceived workplace safety culture among Swedish electricians

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Accidents and injuries caused by electricity are work environment risks for electricians. About a 100 cases are reported annually to the Swedish Work Environment Authority. The safety culture at the electricians' workplaces can affect the successfulness of safety management and the prevention of injuries. This paper presents preliminary questionnaire and interview findings on the perceived workplace safety culture of 523 male electricians who have experienced an electrical injury or accident. The results show a general need for increased safety awareness and motivation for safe work performance on different organisational levels. They also show a need for increased visibility of the management at the workplaces, increased commitment to safety, improved communication with the staff, and the need for increased reporting of incidents and experience feedback in order to achieve well-functioning learning for safety. The preliminary findings offer us a better understanding of the driving forces and barriers to efficient safety management and to safety culture improvements in this industry sector.

Practitioner Summary: Increased knowledge of electricians' perceptions about safety culture at their workplaces can lead to a better understanding of the driving forces and barriers to efficient safety management and learning for safety, the development of well-functioning proactive risk and safety management systems for companies in the sector, and a reduction of the number of electric injuries and accidents among electricians.

Keywords: electricity, learning, safety, safety culture, safety management

1. Introduction

1.1 Background and aim

Electricity can kill or severely injure people and cause damage to property. Accidents caused by electricity or electric current flowing through the body constitute a work environment risk for electricians and about a 100 cases are reported annually to the Swedish Work Environment Authority. In order to prevent electrical injuries and accidents it is vital to have successful safety management at the workplaces of electricians. The success of such efforts depends a great deal on the existing safety culture at the workplaces. Determinants of success are the basic values, norms and attitudes about safety that exist, and if there is a culture that embraces learning for safety and continuous improvements.

A recently completed research project focused on yielding knowledge about the residual physical and psychological effects that serious electrical injuries had on the electricians who experienced them. The project also aimed to gain an overall view of how these electricians perceived the safety culture at their workplaces at the time of the injury or accident. This paper presents the preliminary results from a safety culture study consisting of data from questionnaires and interviews. Increased knowledge of electricians' perceptions of the safety culture at their workplaces can lead to: 1) a better understanding of the driving

forces and barriers to efficient safety management and learning for safety; 2) the development of well-functioning proactive risk and safety management systems in companies in this sector; and 3) a reduction of the number of electric injuries and accidents among electricians.

1.2 Important aspects for achieving a good safety culture

An organisation with a good safety culture is often characterised by all of its members feeling a joint responsibility for safety, and by the high priority placed on safety by both management and employees. Hale (2000) defines safety culture as “. . . the attitudes, beliefs and perceptions shared by natural groups as defining norms and values, which determine how they act and react in relation to risks and risk control systems”. A good safety culture is characterised by members in the organisation who have a creative distrust of the risk control systems (i.e. you expect problems to happen) and who strive to integrate safety thinking and action into all aspects of practical work (Hale, 2000). The safety climate/culture has been shown to be a robust leading indicator or predictor of safety outcomes across industries and countries (Nahrgang, Morgeson & Hofmann, 2007; Christian, Bradley, Wallace & Burke, 2009; Zohar, 2010).

In the research literature, there are several recurrent aspects and themes considered to be important features of a safety culture. Considerable focus is placed on top management, first line management, and safety officers as key influencers of organisational culture and safety culture and who have an effect on safety and health at the workplace (Collins & Gadd, 2002). Persistence, commitment and communicative abilities among first line management are seen as central to making employees understand the importance of safety and why certain safety behaviours are needed (Hale, Guldenmund, van Loenhout & Oh, 2010). Management must be committed and distinctly prioritise safety, and have the required competence and knowledge about the operations and the risks involved (safety intelligence).

Well-functioning and open communication is often seen as a determinant for the establishment and development of a good safety culture. Good communication and listening skills across organisational levels, groups and individuals support a common situational awareness of risk and safety (Flin, O'Connor & Crichton, 2008). Efficient communication and participation among employees will also drive organisational change (Harkness, 2000). It is vital to involve several professional categories in an organisation in the proactive risk and safety management in order to capture different expertise and perspectives on risk and safety (“requisite imagination”) (Hollnagel, 2004; Westrum, 1993).

Awareness and intrinsic motivation are seen as important components in retaining and developing safe work performance among individuals (Hudson, 2007). An individual must have an intrinsic (active) motivation to want to change his/her attitudes and behaviours. An extrinsic (passive) motivation from management levels, for example, is often not enough. Many times, awareness and intrinsic motivation to improve safety attitudes and behaviours are induced when a workplace is shaken by a severe accident or incident. The event becomes an eye-opener and the workplace gains an entirely different and more realistic view of itself as an (un)safe performer of the work.

Incident reporting systems and experience feedback are often seen as determinants for a good learning safety culture and for creating continuous improvement efforts for safety. In order to achieve this, a well-functioning reporting culture is vital, one that avoids blame, has swift feedback, and takes actions and measures when needed. For successful safety learning, a systems perspective must be applied when seeking understanding of what lies behind incidents and accidents in an organisation. It can be a challenge to achieve a learning safety culture or organisation. This is why it is particularly important to ensure that the organisation has the energy and resources allocated for the later parts of the learning loop, which involve the implementation of improvement measures and follow-ups to determine if the desired improvement has been realised.

2. Methods

Questions about electrician's perceptions were included in a questionnaire and in an interview study in order to gain an overall view of how they perceived the safety culture at their workplaces at the time the accident or injury occurred. A brief description of the methods follows.

2.1 The questionnaire study

The process of finding and selecting electricians who had experienced electrical injury included two data sources. The first consisted of the reports on work-related electrical injuries filed with the Swedish Work Environment Authority (SWEA) of which 42 of the people who filed the cases were selected to receive the questionnaire. As a second source, and in order to gain access to unreported cases (as the number is high), the questionnaire was sent to members of the Swedish Electricians' Union. Of those who answered that they had experienced an injury or accident, but had not reported it to SWEA, 481 cases were selected to be included in the study. In total, questionnaires from 523 male electricians who had experienced electrical injury were analysed.

In addition to the questions about the accident and possible health effects, the questionnaire contained 24 items related to aspects of a workplace safety culture (work situation, communication, learning, reporting, safety attitudes, safety related behaviours, and risk perception). Seventeen of the 24 items originated from Ek's questionnaire (2006), and two from a safety culture questionnaire from the Danish National Research Centre for the Working Environment (2002). Items from previous surveys in the electrical industry were also included: two from the National Electrical Safety Board (2005), and one from the Swedish Electricians' Union (2010). Two items originated from discussions in the research project. The electricians responded to the items using a five-point scale (e.g. "Not at all, Barely, A little, Much, Very much" or "Never, Seldom, Sometimes, Often, Very often"), where a higher value on the scale indicated a better safety culture.

2.2 The interview study

A subgroup of 23 electricians from the questionnaire study was included in the interview study. They were selected because they had reported having remaining sensory, muscular or cognitive symptoms after the accident. The purpose of the interview was to capture their perceptions of the workplace safety culture at the time for the injury or accident. The interviews were taped and transcribed and content analyses were performed.

3. Results

Preliminary safety culture results from the questionnaire and interview study are presented here.

3.1 Work situation and communication

Results from the questionnaire study showed that the electricians often received the information they needed in order to carry out the job in a safe manner. The majority of the respondents also had access to the equipment needed to perform their work in a safe manner. This was confirmed by the interview results. Some interviewees reported the difference between employees having access to equipment and having positive attitudes towards using it. Many of the respondents to both the questionnaire and interviews perceived that the safety rules and routines for preventing problems in their work functioned in reality.

Sometimes the electricians perceived their work as stressful and that this could affect work performance. However, several interviewees highlighted that electricians at times deliberately worked faster than needed, for example, so as not to bother the customer more than necessary.

One interviewee who was responsible for safety management at his workplace found it tough to spread information about safety in his work group and to get the group members to think about safety. He reported that the reasons for this were the high level of competition between companies in the sector for jobs, and the tough financial situation in general that resulted in less safe (and faster) work performance. He thought that this reality was difficult to affect.

3.2 Learning and reporting

One questionnaire item asked if the electricians felt that they could express their opinions about the safety at work. Many responded that this was the case. Almost 40%, though, reported that they very seldom received acknowledgement for calling attention to deficiencies in safety.

When experiencing a near miss (i.e. an event that could have led to an accident) the majority of the respondents answered that they seldom reported this in writing. Oral reporting of near misses seemed to occur to a somewhat greater extent. This result was also shown in part in the interviews, but there was also

great variation between employers. Smaller incidents were often not reported (and not systematically). They were sometimes discussed informally at coffee breaks. More severe incidents and accidents were reported to a greater extent (both orally and in writing) and inquiries were performed. Yet, the interviews showed that many severe incidents were not reported at all and that the employees understood that they should have done so.

Many of the interviewees knew that there was a system for incident reporting at the workplace but they were generally unsure about how to use it. They seldom did report, especially with regard to small incidents and near misses.

Questionnaire results showed that the electricians thought the company/employer to some extent called attention to and took seriously the safety problems that arose on the job. This was also confirmed in the interviews.

An important component for achieving learning for safety in any activity or organisation is if you act and make improvements in safety and work when needed. The perception of many of the questionnaire respondents was that when deficiencies on the job that could affect work safety were detected, improvements were in most cases made. However, 25% of the respondents thought they were very seldom made. The interviews also revealed a great variation between employers concerning the improvement measures. After the electricians' injuries or accidents, almost half of them responded that the employer to a very small extent wanted to hear their points of view and experiences from the accident in order to prevent other accidents.

3.3 Safety attitudes and behaviours

This area concerns individuals' and organisations' attitudes and behaviours regarding work and safety. The focus is often on the leadership and how employees perceive it in relation to safety issues.

Many questionnaire respondents felt that employees were encouraged to put forward ideas and suggestions for work improvements. Many also felt that their place of work appreciated the knowledge and experiences of all employees. Half of the respondents strongly felt that the management actively encouraged safe working performances.

Many interviewees perceived that the safety thinking at their workplace was generally rather good, but there were exceptions. One interviewee reported that when facing work tasks that were not routine, they carefully discussed how the task should be performed and how safety issues should be managed. Another interviewee felt that the safety thinking in his company had been raised a great deal in the last few years. He thought this was because the company had experienced three personal injuries in one year. After this, a better safety approach was developed with increased focus on instructions, self-monitoring, testing, and writing protocols.

When asked if they generally talked about how the work could be improved to increase safety, the electricians were divided into three equally large groups of questionnaire respondents (barely, a little, much). Half perceived that their superiors encouraged orderliness on the job, and thought that their supervisors considered safety to be a part of the daily work. Fully half of the respondents also perceived that their closest supervisor seldom checked their work to see if it was performed safely, and very rarely intervened if safety rules/routines were not followed. The interviews gave a broader perspective on these issues, adding that electricians often perform their work "out in the field" (sometimes in pairs) and for different customers, making it difficult for supervisors to check how the work was performed.

3.4 Risk perception

A majority of the electricians in the questionnaire study responded that they could influence safety in their work. 30% stated that there was hardly any risk for accidents in their work; another 30% stated that there was a somewhat high risk. The majority also believed there was almost no risk that their work could lead to others being injured. After coming back to work after the injury or accident, a majority of the electricians stated that their own safety thinking had changed for the better. 58% reported that it had changed a great deal.

The interviews also showed that the majority thought that their own safety thinking and behaviour had been affected by the event. They became more cautious, gave work tasks a second thought, double checked, and were more thorough when performing their work. The accident (as well as near-misses) had

been an eye opener for the electricians. However, respondents had very scattered perceptions when it came to if the focus on safety at the workplace had increased after the accident.

One interviewee highlighted that as individuals we all have different risk perceptions and behaviour in relation to risk and safety. It seems that almost every workplace has an individual who takes unnecessary risks and thus risks his own or his fellow workers' life and health. In such cases, discussions should be initiated about different ways to perform the work and it should become an issue for supervisors and management. Another interviewee strongly suggested that allowing young apprentices to go alongside mentors that take reckless risks at work should be avoided. The transfer of unsafe group norms and behaviours to new young electricians can quickly take place.

4. Discussion and conclusion

This study provides insight into how Swedish electricians who have experienced electrical injury perceive the safety culture at their workplaces. Safety culture is a multifaceted concept and only selected parts of it were in focus in the current study. To gain a more in-depth assessment of electricians' safety culture perceptions, studies should be performed in a number of different companies in the trade and in organisations of various sizes.

Important preliminary findings were revealed in the study that gives us a better understanding of the driving forces and barriers to efficient safety management and to safety culture developments. The study results show a general need for increased safety awareness and motivation for safe work performance on different organisational levels. This can be enabled through education, discussions about safety values at the workplaces, and dialogues in the industry sector.

The management on all levels are important culture bearers that define the safety thinking and action in a workplace. The results showed a need for increased visibility of the management at the workplaces, increased commitment to safety and improved communication with the staff. Increased responsibility and participation of employees in the design of the safety management would also enable a positive safety culture to develop.

The study results showed a need for increased reporting of incidents and experience feedback in order to achieve well-functioning learning for safety. For successful safety learning, a systems perspective should be applied in an effort to understand what lies behind incidents and accidents in an organisation. Adequate resources and energy need to be allocated in an organisation to implement safety improvements and carry out follow-ups.

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