



Making occupational health and safety training relevant for farmers: Evaluation of an introductory course in occupational health and safety in Norway

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ABSTRACT

Agriculture is a hazardous industry, with a high frequency of injuries. As agriculture is an industry mostly consisting of small enterprises, it may be difficult to prevent injuries. In Norway, an OHS course is available for farmers. This study aims to evaluate this course. The evaluation is a prospective exploratory case study evaluation using qualitative interviews. The results suggest that there was not an increase in use and understanding of OHS systems, despite being the aim of the course. The farmers easily absorbed the practical part of the course, getting solutions and ideas for practical risk prevention at own farm. However, using systems adjusted to farm characteristics required external, face-to-face practical involvement at the farm. The study revealed that the course design was not optimal for farmers, as it addressed the farmers as managers, requiring an understanding of theory, while farmers mainly understand their occupation as practical. The course design should be reconsidered to integrate farmers' daily practices.

1. Introduction

Agriculture is a hazardous industry, with a high frequency of injuries (Jadhav et al., 2015; Jadhav et al., 2016). Thus, efforts to reduce injuries are needed. In the European Union (EU), agriculture mostly consists of small enterprises or family farms, where 77% of the agricultural labor force in 2013 consisted of sole holders or other family members (Eurostat, 2016). In the US, 88% of all farms in 2012 were small family farms (USDA, 2015). In Norway, with 41,800 registered agricultural holdings in 2015, the labor input was estimated at 45,900 man years (64% farmers and spouses, 10% family members, 4% independent companies, and 22% employees or temporary hired help) (Statistics Norway, 2016). Contextual factors make occupational health and safety (OHS) interventions generally difficult to implement within small businesses, because they are difficult to reach and they lack resources and competence (Hasle and Limborg, 2006). In Norway, only minimal efforts have been specifically targeted towards small businesses to reduce accidents and injuries. However, the agricultural sector offers farmers an introductory, practical OHS course, provided by the Norwegian Agricultural Health, Environment and Safety Service (Landbrukets HMS-tjeneste, or LHMS¹). This course fulfils the legal

requirements set by the Norwegian Working Environment Act (WEA²) for managers. Despite the course being the main effort for promotion of OHS, it has never been evaluated. As part of the larger research project “Accidents in Norwegian Agriculture” (hereafter termed the AINA project), our study aimed to evaluate this introductory OHS course for farmers.

2. Occupational health and safety within agriculture

The high frequency of injuries within agriculture points to a great need for preventive efforts. Systematic reviews of interventions within agriculture have been performed (DeRoo and Rautiainen, 2000; Rautiainen et al., 2008). DeRoo and Rautiainen (2000) examined published safety interventions and found multi-factorial farm-safety interventions as the most promising means for prevention of injuries. More recently, Rautiainen et al. (2008) systematically reviewed interventions with more restricted designs (randomized controlled trials (RCTs), cluster-randomized controlled trials (cRCTs), controlled clinical trials (CCTs), and interrupted time series (ITS)). This review found no evidence for the effect of educational interventions on injury rates, but it indicated that financial incentives and specific changes in legislation

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¹ Since 2014, LHMS has been part of the Norwegian Agricultural Extension Service, or Norsk Landbruksrådgiving HMS (NLR HMS).

² <http://www.arbeidstilsynet.no/lov.html?tid=78120>.

could be effective. The authors pointed to educational interventions as a component of multi-factorial interventions (Rautiainen et al., 2008).

Reviews focusing on interventions aimed towards small enterprises, regardless of sector, are relevant for agriculture. Breslin et al. (2010) systematically reviewed quantitative evaluations of interventions in small enterprises. When considering inclusion criteria, this review was less rigid than the review by Rautiainen et al. (2008), and included outcomes related to exposures, behavior and health (Breslin et al., 2010). For small enterprises, the conclusions are generally in line with the studies on agriculture performed by Rautiainen et al. (2008). Despite only a few medium- or high-quality studies, they found moderate evidence for effects of OHS interventions across different outcomes, when the interventions consisted of combinations of activities, including training.

Small businesses may require more assistance from external bodies such as government, local authorities and insurance, compared to larger companies (Hasle et al., 2012; Sinclair et al., 2013). This may be due to specific characteristics, such as the manager and the owner being the same person, and the only one responsible for company activities (Hasle et al., 2010). This kind of owner often has no interest in using resources for establishing formal organizations (MacEachen et al., 2010) or for focusing on OHS (Hasle et al., 2010; Hasle and Limborg, 2006). Studies have pointed to the usefulness of intermediaries in reaching small enterprises (Cunningham and Sinclair, 2015; Hasle et al., 2010; Olsen and Hasle, 2015; Sinclair et al., 2013). Intermediaries are organizations that deliver goods or services to small businesses, and they could also deliver OHS information and programs (Sinclair et al., 2013). Suggested intermediaries are local authorities, labor market parties, trade unions, and regional safety representatives (Hasle et al., 2010; Legg et al., 2010; Olsen and Hasle, 2015). A study from New Zealand found that such intermediaries reach out to farmers (Olsen and Hasle, 2015).

Other ways to reach small businesses are by national, sector-wise or local programs (Legg et al., 2010). Programs including education and training specifically targeted towards agriculture are in place in some countries. The Farmsafe program in New Zealand was developed in 2001 by a national alliance of stakeholders within agriculture. The first phase consists of Farmsafe Awareness workshops as a prerequisite to attending the second phase, which consists of Farmsafe plan workshops (developing safety plans) and Farmsafe skills workshops (training in practical skills) (Legg et al., 2010; Morgaine et al., 2006). Later, a workplace safety discount scheme was added (2006), providing a 10-percent levy discount in the New Zealand Accident Compensation Corporation (Olsen and Hasle, 2015). A community-based Canadian program, initiated in 1988, delivered both educational and clinical interventions. The educational section consisted of newsletters, team packages, on-site training activities, and injury-control conferences covering many topics (Hagel et al., 2008). Both programs showed inconsistent results (Cryer et al., 2014; Hagel et al., 2008; Legg et al., 2010; Morgaine et al., 2006).

As education is a possible component within a multi-factorial approach (Breslin et al., 2010; DeRoo and Rautiainen, 2000; Rautiainen et al., 2008), there is a need for studies with a broad perspective that allow us to understand how a course may work within a larger context. Criticism of OHS intervention evaluations has been voiced regarding the use of randomized controlled trials, ignoring the understanding of interventions taking place in a real-world context of dynamic, complex social systems (Lipscomb et al., 2009; Pedersen et al., 2012; Sanson-Fisher et al., 2007). Other critiques mention that studies evaluate the end results but not the process behind the intervention (Olsen et al., 2012). Several researchers have suggested realist methodology as an alternative approach to examine safety interventions (Olsen et al., 2012; Pedersen et al., 2012). Realism tries to identify “the mechanism

of how complex interventions work [or why they fail] in particular contexts and settings” (Pawson et al., 2005). According to Pawson, (2006, pp. 21–25), an intervention can be understood in the sense of mechanisms (M) explaining what make things happen, the context (C) that is the surroundings or external conditions facilitating or limiting the uptake of the intervention and the outcome (O) of the intervention. The realist approach focuses on patterns of outcome more than on regularities. This reflects an understanding that similar interventions may not work the same way within different contexts (Pawson 2006, p. 22).

Sector-wide strategies and programs to address injury prevention exist in Norway (Ulykker i Norge, 2009). As part of the annually negotiated agreement on agricultural policy between the government and the farmers’ associations, a work group covering all stakeholders within agriculture was in 2009 mandated to organize OHS within the agriculture sector. This became part of the established Common Plan for OHS in Norwegian Agriculture 2007–2012 program (Ministry of Agriculture and Food, 2010). This group points to several important actors in injury prevention. Food Branding Foundation (Matmerk) is responsible for the Norwegian Agricultural Quality System (KSL), offering a quality system that all registered farmers can access. Approximately 37,000 Norwegian farmers are certified in accordance with this system.³ The system established standards and documentation schemes, based on laws and regulations pertaining to agriculture, as well as requirements from industrial farm-product recipients. As this system reflects all regulations relevant to agriculture, its five-year external audit and the annual internal audit cover the WEA and all relevant OHS regulations. The central bodies in the agricultural sector have agreed that OHS should form an integral part of the agriculture quality system.⁴ The other important party mentioned by this work group is the Agricultural Health, Environment and Safety Service (LHMS). The Common Plan for OHS in Norwegian Agriculture 2007–2012 considers the practical OHS course offered by LHMS as the main intervention (Ministry of Agriculture and Food, 2010).

The aim of the course is to provide participants with basic system understanding and knowledge of practical OHS and enhance the use of a documentation tool satisfying the legislative requirements for systematic OHS.⁵ The course has three parts as described in Fig. 1. The course addresses basic information about OHS such as legislative and regulatory issues, accident risk, ergonomics, chemical, biological and physical exposure, and mental health. It also covers law and regulation including employer responsibilities, systems, routines, and measures. The e-learning part of the course culminates in an online examination, that is to be passed to receive the course certificate. The farm visit includes a walk through the farm, observing and discussing OHS challenges and solutions, as well as guidance in how to organize practical OHS work including the use of a tool for systematic OHS. This tool is an electronic system for planning and documentation of OHS. Despite the vital role of this course, it has never been evaluated. Therefore, based on the study’s overall aim and the course content, the research questions are:

How do farmers perceive the format and content of the course?

How does the course in practical OHS work regarding:

- Increased understanding of systematic OHS?
- Implementation and use of systematic OHS tools?
- Efforts to control risk at farms (outcome)?

How can external factors influence and moderate potential associations between input and output?

³ Personal communication, Tom Roterud, KSL, March 9, 2017. For example, 99.8% of all dairy products by volume were produced according to this standard.

⁴ <http://www.matmerk.no/no/ksl>.

⁵ <http://www.lhms.no/kurs/detalj/praktisk-hms-arbeid#.WCxeKmk7GS0>.

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