

Short summary of the Doctoral Thesis: “Evidence-informed decision making in occupational health and safety”

Decisions to (de-)implement occupational safety and health (OSH) interventions are not always supported by the best available scientific evidence. The aim of this thesis is to investigate how researchers can support OSH decision makers in using the best available evidence when (de-)implementing OSH interventions. For this we split the thesis into two parts. In the first part of the thesis, we looked at the quality of evidence from research studies that can inform policy makers' and other stakeholders' decisions. In the second part of the thesis, we analyzed how OSH decision makers can make evidence-informed decisions from a population and individual perspective.

We conducted three studies to analyse the quality of the evidence in OSH: two Cochrane systematic reviews and an analysis of the reporting quality of randomized controlled trials (RCTs) in OSH. In the first review we included only RCTs and found moderate quality evidence that double gloves can prevent about 70% of needle stick injuries compared to single gloves. Thus, the true effect is likely close to the estimated effect. In the second review we included randomised, non-randomised and qualitative studies and found the effect of workplace inspections to be inconsistent across different study designs. Pooled results showed that inspections do not or only have a small effect on injury rates after one to two years but substantially decrease injuries after three years compared to no intervention. Qualitative studies showed support by workers and employers for inspections but also doubt that they are effective. The quality of the evidence was low to very low. Thus, better quality research is likely to change the estimate and we are uncertain about the effect found. RCTs are believed to provide the most reliable evidence but we found that most trials in the OSH field do not fulfil the Consolidated Standards of Reporting Trials (CONSORT). This negatively impacts the risk of bias assessments and thus the quality of the evidence in OSH.

We conducted two studies to analyse the use of knowledge translation tools to inform policy makers and workers decisions regarding OSH. In the first study we used the evidence to decision (EtD) framework to inform a policy decision on whether to de-implement return to work coordination, which is widely implemented but was found ineffective in reducing sick leave. In the second study we developed and evaluated the feasibility of a decision aid for healthcare workers on the use of double gloves to prevent needle-stick injuries. Both tools enabled a systematic and transparent approach to decision making that is informed by the best available evidence for all relevant decision-making criteria, such as effectiveness, costs, and personal values.

In conclusion, better quality evidence can provide decision makers with higher confidence in the results and support evidence-informed decisions at the international, national, company and individual level. However, the quality of evidence in the OSH field is moderate at best. More studies with a low risk of bias and better reporting of trial methods can improve the quality of the evidence in the OSH field. Knowledge translation tools, such as the EtD framework for policy makers or a decision aid for workers, should be implemented in the OSH field to support decisions that consider the best available evidence for all decision-making criteria, including the effectiveness of OSH interventions.