Title: Interventions to reduce machine-related accidents on farms: A systematic review and analysis of behavioural components

Authors

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Background: The agricultural sector reports 40-50% of fatal workplace incidents globally, and tractor accidents are the most common type of fatality. With socialisation and normalization of danger and conscious risk taking in farms, studies suggests that targeted behavioural change strategies focusing on adoption of safety behaviours would be effective in long term. A systematic analysis aided by behavioural science frameworks to identify and assess the intervention ingredients in the existing interventions would provide a choice of intervention components for behavioural-based interventions in the future.

Objective: To conduct a systematic review to identify interventions to reduce machine-related accidents on farms and to describe the behavioural components included in these interventions.

Methods: The systematic review is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Seven electronic databases were searched in November of 2020. The quality of included studies were assessed using Cochrane risk of bias assessment tools. Following Behaviour Change Wheel guidance, the intervention functions and BCTs in included interventions were coded. A narrative review was used to synthesise the findings..

Result: Nine studies met the inclusion criteria. Overall, 8 (of 9) intervention functions and 19 (of 93) unique BCTs were coded across interventions. The most frequently coded intervention functions were education and incentivisation, and BCTs were 4.1 Instruction on how to perform the behaviour and 10.8 Incentive (outcome).

Conclusion: Future studies need to address the key risk factors and gaps identified within the review and improve reporting of active contents of interventions