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Occupational Health and Safety on Australian Farms: 1. Farmers' Perceptions of Major Hazards

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Abstract

A subset of data from a larger survey of 335 farm enterprises throughout New South Wales was examined, focusing specifically on farmers' perceptions about major hazards on Australian farms. The data collected from participating enterprises clearly demonstrate that there is a disconnect between what farmers perceive as the risks on their farm and what hazards and risks cause the highest rates of fatalities in Australian agriculture. For example, previous research has shown that tractors were the most commonly reported agent of death by injury on Australian farms over the period 2001–04, accounting for 19 per cent of fatalities, followed by all-terrain-vehicles (ATVs). However, a frequency analysis of identified risks or hazards by study participants, rated tractors at 20th, with ATVs even further down the list at 27th; just 11 of the 335 enterprises rated ATVs as a risk on their farms. The most frequently reported injury agent by study participants was livestock handling and stockyards, followed by silos and chemical handling. While these agents are seen commonly in farm safety campaigns and promotions due to the legislative requirements with training and operation, with the exception of livestock handling, they do not feature highly in injury hospitalisation, and none of these agents feature in the causation of deaths on farms.

Key Words: farm, health and safety, farmer perceptions, hazards, risks

Introduction

Knowledge of the hazards and risks perceived by Australian farmers on their properties is essential to the design and evaluation of farm health and safety initiatives and programs. However, there is a lack of comprehensive data on the topic, with most Australian cross-sectional studies focusing on small sample populations (Australian Safety and Compensation Council, 2006; Day and Stathakis, 2004; Durey and Lower, 2004; Sandall and Reeve, 2000).

The Australian Centre for Agricultural Health and Safety (ACAHS) undertook to establish a longitudinal study of farm enterprises throughout NSW to derive data on changes being made on Australian farms, reasons for change, and to establish how changes relate to farmer perceptions (Pollock, 2010). While the survey has since been discontinued, some interesting data emerged from the baseline collection.

This paper focuses on a free-text question in the questionnaire examining the hazards that farmers report as being a current safety risk or issue on their farm. A companion paper (Pollock, Fragar and Griffith, 2014), reports ways that farmers have changed their activities to manage these risks. Linkages to farm injury fatalities are the principal theme of these analyses: the costs associated with such fatalities are examined in a set of related papers (Lower and Herde, 2012; Pollock, Fragar and Griffith, 2012).

Literature Review

There have been many farm safety interventions, much legislation and numerous procedures put into practice over recent years based on sound injury epidemiology, but there has been little analysis to assess how these documented key hazards rate in comparison to what farmers see as being the key risks on their farms.

Day and Stathakis (2004) undertook a qualitative and quantitative study to monitor changes in farm safety in Victoria over the period 1997–2001. They found that farmers were making changes to occupational health and safety (OHS) systems and practices on their farms, with small increases in training, fitting of Roll-Over Protection Structures (ROPS) and safety equipment and devices. The

study recommended investigating the feasibility of a longitudinal study to assess whether improved safety behaviour leads to a reduction in injuries.

Durey and Lower (2004) investigated attitudes and beliefs of a sample of Western Australian farmers, focusing on development of a safety culture and the reluctance of farmers to adopt State OHS programs. The study found that, despite improvements in the awareness and importance of farm safety, significant gaps existed between knowledge and practice. While most farms rated standards of safety on their farms as '*high*', farm safety was not a prime consideration, falling victim to a focus on production, ease of management, cost efficiency and profit. While the majority of participants believed that some regulations for farm safety were necessary, most felt that they were impractical and were unsure how to comply.

Sandall and Reeve (2000) researched the attributes of farm hazards that are used by farmers to make decisions about risks. They observed that perceptions of '*low control*' can lead to difficulties in encouraging farmers to take preventative action, while '*high control*' hazards can result in farmers concluding that no further action is required, as the matter is in hand. They noted that when farmers' perceptions of the relevance of hazards were compared with their production data, there was an imbalance, in that a hazard may be present on a farm yet a farmer judges the hazard to be irrelevant for their situation. Graziers were an example of this theory, with 20 per cent of graziers surveyed reporting animal-handling injuries as irrelevant to their situation.

Knowles (2002) investigated perceptions and risk-taking of farmers in England and Wales and found that, as in Australian studies, farmers were aware of certain dangers and hazards, but continued to take risks, regardless. The report found that 56 per cent of farmers admitted to using machines with unguarded power take-off shafts, despite being aware of the dangers associated with this practice. However, the study did recognise that there is an element of risk-taking that can be attributed to a lack of awareness of the risks of injury.

Murphy (2003) further demonstrates this point through his discussion of the '*risk paradox*'; the considerable incongruence and large disconnects between farm people's safety knowledge, values and practices. Murphy states that 'while farmers understand farm work is potentially dangerous, they seem relatively unconcerned about their risks of injury, particularly in comparison to other, more immediately perceived concerns such as product prices, machinery repair, workloads, etc. Nor do farmers' perceptions of hazards and risk match up well with injury records. Finally, despite parents' concern for their children's safety and health, parents routinely expose their children to the same life-threatening work hazards and risks that they accept' (Murphy, 2003, p. 27).

The risk paradox concept is problematic for agricultural health and safety as it suggests that approaches to farm health and safety research, education and intervention must consider the interconnectedness among the many facets of farming, and how they influence the cultural beliefs and practices of farmers. Therefore, they must embrace the fundamental social, political, environmental and economic realities shaping farming's culture and future (Murphy, 2003).

Of the research into farm safety interventions, the most common approach tends to be through education and awareness programs. However, Murphy et al. (1996) challenge the success of this approach, suggesting farmers are not making the connection between the education and awareness programs and the elimination, reduction and control of physical hazards and the modification of work behaviour that may cause injury.

There is a gap in the literature relating to the risks and hazards that farmers identify on their farms and how their recorded risks correlate with known hazards derived from injury statistics. This research aims to address this information gap and, through an improved understanding of farmer perceptions, increase the effectiveness of Australian farm health and safety interventions and initiatives.

Methodology

The Australian Centre for Agricultural Health and Safety (ACAHS) undertook to establish a longitudinal study of farm enterprises initially throughout New South Wales, Australia, to be later expanded into other states, in order to derive better data on the changes being made on Australian farms, the reasons for change, and to establish how these changes relate to farmer perceptions.

Five NSW Statistical Divisions (SDs) were selected for inclusion in the study (Northern, North Western, Richmond Tweed, Mid-North Coast and Central West), representing a wide range of

agricultural industries, from small-scale, family-owned intensive production in the coastal regions, through to large, extensive, corporate-owned enterprises in western and northern regions of NSW.

Written correspondence resulted in 335 farm enterprises recruited into the first phase of the longitudinal study in 2007. The farm enterprises recruited were involved in a range of single and mixed agricultural enterprises from livestock, grains and cotton through to horticulture. The most frequently reported enterprise was grains and livestock (n=63, 18.8 per cent), followed by cattle (n=58, 17.3 per cent), mixed livestock (n=49, 14.6 per cent), grains and sheep (n= 38, 11.3 per cent) and grains and cattle (n= 34, 10.1 per cent). The majority of informants were male (n=263, 78.5 per cent) and ages ranged from less than 25 years, though to 65 years plus, with the most common age grouping being 45–54 years.

The baseline questionnaire was made up of four key sections: demographics and farm enterprise overview, safety benchmarking, a number of free-text questions relating to risks and changes on their farm, and injury reporting (Pollock, 2010). This paper concentrates on one of the three free-text questions: '*What do you see as the current safety risks or issues on your farm?*' A companion paper (Pollock, Fragar and Griffith, 2014) focuses on the other two free-text questions and reports ways that farmers have changed their activities to manage these risks.

Results

There were 680 reported risks by 319 farm enterprises, which were simply classified into generic categories and sub-categories. These are reported in Table 1. The most commonly perceived risks by farm enterprises were livestock handling and working in stockyards (n=57), silos (n=55), usage and storage of farm chemicals (n=33), a general over-familiarity, complacency, carelessness and human error (n=28) and working with machinery and equipment (n=27). Unfortunately, the results could not be categorised by industry or by gender of the farm manager, and no detailed statistical analyses were done. These are acknowledged as limitations, particularly as the risks of undertaking farm activities will be different in different industries.

Discussion

A key finding of the study was the divergence between farmers' perceptions of the risks and hazards on their farms and the actual incidence of fatalities.

Over 2001–04, tractors were the most commonly reported agent of injury death on Australian farms, accounting for 19 per cent of fatalities, followed by all-terrain-vehicles (ATVs), drownings, utility vehicles and 2-wheel motorcycles (Pollock, 2010). However, a frequency analysis of identified risks or hazards by study participants, rated tractors as 20th, with ATVs further down the list at 27th; in fact just 11 of the 335 enterprises rated ATVs as a risk on their farms.

The risks ranked highly by farmers (livestock handling, silos and chemical handling) are seen commonly in farm safety campaigns and promotions due to the legislative requirements with training and operation. Yet, with the exception of livestock handling, they do not feature highly in injury hospitalisation, and none of the agents feature in the causation of deaths on farms identified by Pollock (2010).

The emphasis placed on the installation of ROPS on tractors without cabins by work safety authorities has resulted in farmers associating tractor risk with rollovers. While fewer rollovers have been occurring on Australian farms, due to this retrofitting of ROPS, the number of tractor runovers has risen, and will likely continue to do so as the farming population continues to age and farmers become less agile and steady on their feet (Pollock, 2006, unpublished). Farmers seem to be unaware that their tractor, even with its cabin or ROPS, is still a major hazard and the leading cause of deaths on Australian farms.

ATVs are seen to be a safer alternative to horses and 2 wheel motorcycles, due to their four thick-set tyres and perceived stability. However, they are often used for tasks beyond their original design capability. Lack of formal training, excessive loading (eg, with spray tanks), inappropriate attachments (eg, boom sprays, toolboxes), carrying of passengers and use by children all increase the risk of ATV collision and rollover.

Table 1: Perceived risks, by category

Perceived Risk	Frequency
Machinery, Equipment and Structures	339
Livestock handling and stockyards	57
Silos	55
Chemicals and storage	33
Machinery and equipment	27
PTOs	23
Workshop and tools	22
Shearing shed and shearing	21
Augers	19
Motorcycles	19
Tractors	14
Age of machinery and equipment	11
ATVs	11
Chainsaws	10
Fuel tanks	7
Windmills	6
Lack of safety signage around farm	4
Management, Self and Employees	203
Familiarity, complacency, carelessness and human error	28
Workload, fatigue and stress	22
Hazardous nature of farm work	17
Isolation and working alone	17
Lack of employee accountability and poor commitment to OHS	16
Lack of commonsense	15
Children and safe play areas	15
Finances and a lack of resources	15
Work safety authorities, reporting and compliance issues	14
Authorised and unauthorised visitors	13
Self, family and employees getting older	9
Maintaining the health and safety of employees	8
Lack of training	6
Hearing loss and eye damage	4
Staff turnover	2
Trying to pre-empt problems and risks	2
Procedures and Practices	66
Employees not using PPE	17
Not wearing helmets on ATVS, motorcycles and horses	15
Working at heights	13
Vehicles and road safety	12
Lifting and loading	9

Environmental	52
Terrain of farm	11
Dams and irrigation channels	9
Sun and skin cancer	6
Vegetation	5
Animals	16
Horses	13
Snakes/Spiders	3
There are no risks on my farm	4
TOTAL	680

Water bodies (farm dams, creeks and rivers and irrigation channels), farm utilities and 2-wheel motorcycles are commonly seen on Australian farms, yet farmers still appear to be generally unaware of the potential fatal risk involved in their use and that there are simple safety practices and policies that can be readily implemented on farms at little or no cost for each of these high risk agents.

This information clearly demonstrates that farmers are overestimating the risk of agents less commonly resulting in fatal injuries while underestimating the risks of the most frequent causes of death on Australian farms. This creates a challenging situation for farm safety initiatives and promotions, in that a balance needs to be struck between awareness of the common causes of non-fatal injury and the causes of fatal injury. While fatal injuries are certainly less common than non-fatal injuries, their potential economic cost, not to mention the emotional cost, is possibly far more consequential.

Conclusions

As with other Australian and international studies, the research demonstrated a substantial disconnect between what farmers perceive as the risks on their farm and what hazards and risks cause the highest rates of fatalities.

Farmers are either living and working with a false sense of security that, as they have a ROPS or a tractor with a cabin, as four wheels are more 'stable' than two, and utilities are a safe vehicle, there are therefore no risks associated with their use, or they are wittingly accepting an excessive level of risk. The former, invalid risk perception, needs to be addressed in future farm safety interventions.

The challenge is therefore to reconcile farmers' overestimation of the risk of less common agents, while underestimating the risks of the most frequent causes of death on farms. Thought needs to be given to whether future farm safety initiatives focus on high rate, low severity injuries, such as those occurring from animal handling, or low frequency, high severity and risk-of-death injuries, such as those involving tractors and ATVs.

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