

5620 - Systematic reviews in agricultural health

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We have published a systematic review of the association between animal feeding operations (AFO) and community-health outcomes. In this presentation we report the findings of that systematic review, discuss how systematic reviews differ from narrative reviews and present the protocol for a new systematic review reassessing primary research published since the 1st review. Numerous narrative reviews describe the association between community-health outcomes and proximity to AFOs. Narrative reviews often omit information such as eligibility criteria for studies, the approach to identifying eligible studies, the magnitude and precision of associations reported in the primary studies and an assessment of the potential for bias in underlying primary research. These omissions mean the end user is not able to assess the potential for bias to affect the conclusions of the narrative review. Systematic reviews are an approach to research synthesis that addresses these concerns. Well-executed systematic reviews have an a priori protocol, well-defined eligibility criteria, document the approach to identifying eligible studies, report the magnitude and precision of the association, and the potential for bias within the eligible studies and across the body of work. The systematic review we conducted was restricted to studies reporting health outcomes in individuals living near AFOs in North America, European Union, United Kingdom, and Scandinavia. From June to September 2008 searches were conducted in PUBMED, CAB, Web-of-Science, and Agricola with no restrictions. The reference list of narrative reviews were searched for relevant studies. Nine relevant studies were identified. The studies were heterogeneous with respect to outcomes and exposures assessed. Two reviewers independently evaluated the role of chance, confounding, information, selection and analytic bias on the outcomes. Few studies reported an association between surrogate clinical outcomes and AFO proximity. A negative association was reported when odor was the measure of exposure to AFOs and self-reported disease, the measure of outcome. There was evidence of an association between self-reported disease and proximity to AFO in individuals annoyed by AFO odor. There was inconsistent evidence of a weak association between self-reported disease in people with allergies or familial history of allergies. No dose response relationship between exposure and disease was observable.

5420 - Hired Farm Worker Injuries on Crop Operations in the United States- A Comparison of Two Time Periods

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Introduction Hired farm workers in the United States are a severely marginalized labor force. Their work is physically demanding, includes environmental exposures, and has increased injury risks. This study compares demographic and occupational injury data for hired farm workers over two time periods. **Methods** The National Agricultural Workers Survey (NAWS) data are derived from a national probability sample of hired farm workers on crop operations in the US. The National Institute for Occupational Safety and Health collected injury data through the NAWS surveys during the early survey period of this study in 1999 and 2002-2004, and the second survey period of 2008-2010. **Results** The median age rose from 31- to 35-years between the earlier (1999 and 2002-2004) and second survey period (2008-2010). Thirty-eight percent of the farm workers had more than 10 years of work experience in agriculture in the earlier period compared to 48% in the second period. Hired farm workers classified as 'settled' (non-migrant) increased from 60% to 74%. The overall injury rate declined from 4.3 per 100 fulltime equivalents to 2.9, with a 31% decline seen among males and 43% decrease in females. Older age groups (35-44 years and 45+) had the highest injury rates during both survey periods. By type of injury event, overexertion from lifting accounted for 20% and 16% of the injuries respectively, while struck by a slipping handheld object comprised 13% and 12% of the injuries. Sprains and strains increased from 39% to 50% of all injuries. Cuts/lacerations (21% during both periods), and fractures/dislocations (13% and 12%, respectively) were also common. Injuries to the back (25% and 27%, respectively) and lower extremities (16% and 20%, respectively) were similar during the two periods while injuries to the hand/wrist/finger were more common during the earlier period (33% and 22%, respectively). **Conclusion** This national level farm worker survey shows that the median age has increased and there is a higher percentage of non-migrant workers. Injury rates have decreased but older age groups still have the highest injury rates with sprains and strains being more common in the later period.

5317 - "Tough to Tie Your Shoes While You're Walking" - A Qualitative Analysis of Power Take-Off Driveline Shields: Barriers and Motivators to Shield Use for New York State Farmers

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New York Centre for Agricultural Medicine and Health

Background: Machinery entanglements are one of the top three causes of death in farming. Education on the risks of unshielded power take-off equipment (PTO) does not appear to significantly alter farmers' willingness to replace missing or broken shielding. Different assessments conducted in various regions of the U.S. indicate that as many as one-third to one-half of PTOs are inadequately shielded. **Methods:** Qualitative research was conducted with NY farmers to identify the factors that influence the decision to replace damaged or missing PTO driveline shields. Interview topics included: knowledge of entanglement risks, decisions regarding safety in general, decisions relating to PTO driveline shielding specifically, and the barriers and motivators to replacing missing or broken PTO driveline shields. **Results:** Interviews with 38 farmers revealed the following themes: 1) farmers are fully aware of PTO entanglement risk, 2) insufficient time and money are primary barriers to purchasing or replacing damaged or missing PTO driveline shields, 3) PTO driveline shield designs are problematic and have led to negative experiences with shielding, and 4) risk acceptance and alternate work strategies are preferred alternatives to replacing shields. **Conclusions:** Our findings indicate that more innovative approaches will be required to make PTO driveline shield use a viable and attractive

choice for farmers. New shield designs that address the practical barriers farmers face, as well as the provision of logistical and financial assistance for shield replacement, may alter the choice environment sufficiently to make replacing PTO driveline shielding a more attractive option to farmers.

5575 – Does farm vehicle vibration alter postural control?

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Objectives: The 12-month prevalence of low back pain (LBP) for New Zealand (NZ) farmers is ~ 60%, and many episodes have an unidentifiable cause. Cumulative exposures including whole body vibrations (WBVs), mechanical shocks, and sustained flexed postures have been identified as risk factors for the development of LBP. Quad bikes (QB) are the predominant general purpose farm utility in NZ exposing the driver to: low frequency (1 to 50Hz) and resonant (2 to 8Hz) tri-axial WBVs; mechanical shocks; vehicle roll/pitch; and awkward sitting postures. While direct spinal structure damage is a plausible injury mechanism from WBVs and mechanical shock, WBVs can also disturb postural control and may be one of the pathways for injury risk. This fieldwork research has explored how QB driving alters PC during the performance of postural tasks. **Methods:** A sample of 34 male farmers drove a quad bike for 30 minutes on a pre-selected farm track. All participants stood on a force plate and performed a battery of tasks (bipedal and unipedal stance, lifting, and forward leaning) immediately before and after the driving episode. Forces and moments were processed to provide information on body sway through changes to centre of pressure (COP) **Results:** While statistically significant increases in the magnitude of these COP measures during lifting, bipedal stance and leaning tasks were observed post driving, an unexpected decrease in sway measures were observed during unipedal stance. **Conclusions:** These results demonstrate a mixture of alterations in postural control following a period of quad bike driving. Adverse postural alteration may be associated with risk of injury and LBP while undertaking occupational activities post quad bike driving, although it is unclear why there was improvement in postural control during one task. Variations in age, body morphology and a mixed, uncontrolled spectrum of vibration frequencies may be a factor in these fieldwork observations. We will investigate these data further with controlled exposure and postural experiments in the Ergonomic laboratory at the Canadian Centre for Health and Safety in Agriculture in an attempt to identify predominant factors that may produce such alterations in control.

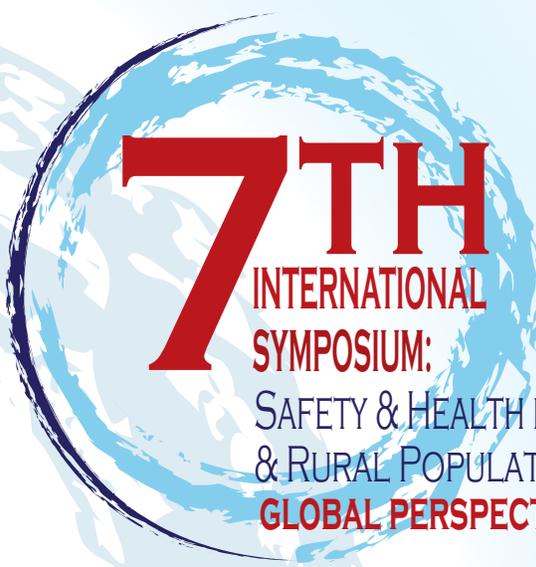
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H) Rural Healthcare and Nursing II	Chair: Dana Edge	0935 – 1135

5348 - Exploring the Perceived Work-Related Demands of Palliative Care Nurses within a Rural Context

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Background: Enhancing the quality of palliative and end of life (P/EOL) care for patients and their family members is an essential role of nurses from a variety of practice settings (e.g., hospital, long-term care, home-care). However, the disparity between the growing demand for P/EOL care in rural/remote settings and the Canadian health care system’s capacity to provide this care is a concern. Nurses within rural/remote practice settings are facing increased palliative workloads, increased complexity of care, and often under-resourcing of palliative care services. Concerns are raised regarding the impact these demands may have on rural nurses who provide P/EOL care. **Purpose:** This study explores the perceived work-related demands of registered nurses (RNs) who provide P/EOL care in the context of rural/remote nursing practice. **Method:** The findings of this study are part of an interpretive descriptive qualitative study, exploring the perceived job resources, job demands and personal resources of RNs who provide P/EOL in a Western Canadian Province. Purposeful sampling was used to enroll P/EOL care nurses in the study. Data were collected using open-ended interviewing techniques and a writing exercise, and were then transcribed verbatim for analysis using constant comparative methods. **Findings:** Findings suggest that the professional quality of life of rural palliative care nurses is adversely influenced when their moral and ethical decision making is confounded by health system restrictions and unrealistic practice demands. Four main themes surrounding their perceived work-related demands were a) organizational constraints, b) environmental climate, c) perceptions surrounding palliation, and d) communication breakdown. **Conclusions:** It is hoped that findings of this study will inform future research and policy and improve the professional quality of life of nurses who provide palliative and end of life care in a variety of rural and urban practice settings.



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