Occupational Injuries to Senior Farmers in Sweden

K. Nilsson, S. Pinzke, P. Lundqvist

ABSTRACT. *The prevailing demographic change in the western world means that the workforce is becoming older. Farmers in particular often work beyond the normal retirement age, in a challenging physical environment. For example, the agricultural sector has the most hazardous work environment in Sweden. Therefore, it is interesting to examine the following questions: Are senior farmers more frequently involved in work-related injuries? Do some injuries happen more often in the oldest age group? Which part of the body is most frequently affected in different age groups? What can be done to decrease the risk of injury in senior farmers?*

Keywords. *Aging, Agriculture, Elderly, Farming, Injury, Sweden, Work accident.*

The data used in this study were responses from 223 injured farmers collected by the Swedish Farm Registry as part of a survey sent to 7,000 farms by the Swedish University of Agricultural Sciences and Statistics Sweden in 2004. These data showed that there were no significant differences in injuries incurred between the age groups, but that senior farmers seemed to suffer longer from their injuries. This study highlights the importance of advising senior farmers to bear in mind that their bodies are no longer as young and strong as before. All age groups of farmers should, of course, be careful and consider the risks involved in their work, but since aging bodies need longer to heal, senior farmers probably need to be even more careful and review their work situation and work environment in order to avoid injuries during the final years of their working life. It is therefore important to educate senior farmers about the risks of injuries causing increasing damage due to their age.

Today, most European countries and the rest of the western world have an increasingly aging population (Ilmarinen, 2006). This is also true of Sweden (fig. 1), where approximately 22% of the population will be age 65 years or older by around 2020 (Bornefalk and Yndeheim, 2004). As a result of the aging labor supply in Sweden, people will probably have to work to an older age in order to maintain the welfare state (Swedish Ministry of Finance, 2008). In any event, people associated with farming usually work until they reach an older age (Pinzke, 2003; Hernandez-Peck, 2008; Reed et al., 1998). In the farming industry all over Europe, the elderly workforce is over-represented (Villosio, 2008).

Submitted for review in March 2009 as manuscript number JASH 7949; approved for publication by the Journal of Agricultural Safety and Health of ASABE in December 2009.

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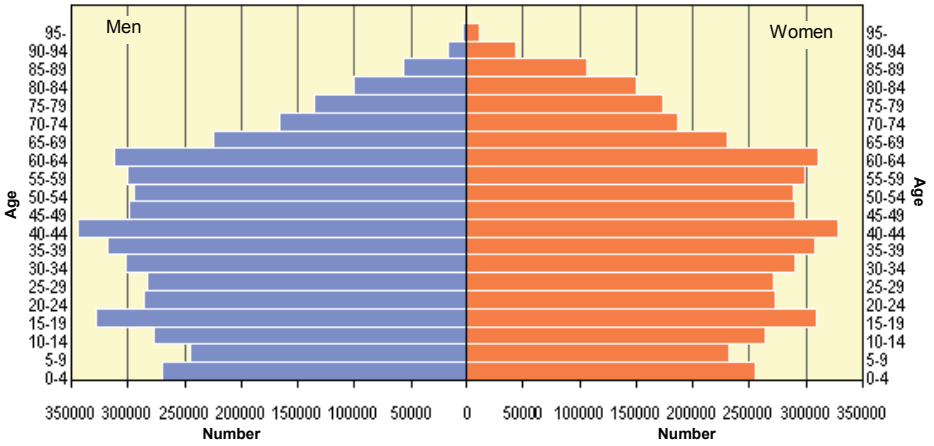

Figure 1. Population of Sweden by age and gender in 2008 (source: Statistics Sweden, 2009a).

Approximately 174,000 people work in farming in Sweden, 22% of whom are age 55-64 years and 15% are 65 years or older (Swedish Board of Agriculture, 2006). In 2005, 70,748 of those involved in farming were farm owners, but this number fell to 67,677 by the end of 2007, excluding legal persons (legal persons are farm owners who do not work on the farm) (Swedish Board of Agriculture, 2008). Fifty-six percent of all farmers in Sweden and 31% of farmers over 65 years of age are full-time farmers (Statistics Sweden, 2009b). The number of farmers above the age of 64 increased from 20% in 2005 to 22% in 2007 (Swedish Board of Agriculture, 2008) (table 1).

Some studies show that senior farmers do not readily take sick leave and often continue to work even when they are injured (Voaklander et al., 1999; Pinzke and Lundqvist, 2007). Many farmers in all age groups seem to accept risks and injuries as a natural and inevitable part of the job (Farmsafe Australia, 1999; Nilsson, 2009). Senior farmers also avoid or delay seeking medical attention (Reed et al., 2008). An active physical, mental, and social lifestyle tends to maintain the capacity and function of elderly individuals (Ilmarinen, 2003). It has been shown that people who work in the "human service sector," such as taking care of children or people with special needs, put their work before their own well-being (Lipsky, 1980; Jönsson, 2005). A recent study has shown that farmers who work with animals can neglect their own health and safety in caring for their animals (Kolstrup, 2008). Despite this, some studies show

Table 1. Numbers (and percentages) of Swedish farmers in different age categories in 2005 and 2007.

No. of Farm Owners[a]	Age Group								
	Below 25	25-34	35-44	45-49	50-54	55-59	60-64	Above 64	Total
2005	294 (0.5%)	3,952 (5.5%)	12,814 (18%)	9,285 (13%)	9,871 (14%)	10,679 (15%)	9,919 (14%)	14,093 (20%)	70,748 (100%)
2007	257 (0.5%)	3,311 (5%)	11,455 (17%)	8,460 (12.5%)	9,374 (14%)	9,927 (14%)	10,065 (15%)	14,828 (22%)	67,677 (100%)

[a] Numbers refer to farms with more than 2.0 ha of arable land, farms with large animal herds, or holdings with at least 2500 m^2 of outdoor horticultural cultivation or at least 200 m^2 of greenhouse area.

that senior farmers are in better health with respect to mental disorders, cardiovascular diseases, and cancer than senior citizens in other occupation groups (Stiernström et al., 2001; Blair et al., 2005). Farm work involves most of the major physiological systems, and it is impossible to ignore the fact that with old age comes an increase in the risk of injury due to age-related physiological changes (Mitchell et al., 2002). Moreover, this risk can increase for senior workers on medication.

In Sweden, employers must notify the Swedish Work Environment Authority about serious work injuries. Workers can also obtain compensation from the work injury insurance system if they are injured in an accident at work or on the way to or from work, or if they develop an occupational illness. Accidents and injuries constitute a high financial cost to companies and society and, even more importantly, physical and mental suffering to individuals and families. Some research has shown that it is mainly senior workers who run the risk of injuries (Danielsson, 2000; SRSA, 2007). Other studies conclude that older farmers have a lower overall injury risk, but that any injuries incurred by this group appear to be much more severe (Myers et al., 2009). The number of reported work-related injuries resulting in 14 days or more absence from work also increases with age (Swedish Work Environment Authority, 2008). In 2007, 75 persons died in work-related injuries in Sweden (Swedish Work Environment Authority, 2008). Of these, 33% were 55 years old or more, although only 22% of the workforce was in this age group (Swedish Work Environment Authority, 2008).

Many injuries and deaths among the workforce in Sweden happen in agriculture and forestry (Swedish Work Environment Authority, 2008). Of the total number of 727 people in Sweden who died in 1997-2007 from work-related injuries, 7% of the employed and 72% of the company owners killed were working in the agriculture and forestry sector (Swedish Work Environment Authority, 2008). The incidence of mortality for 2007 showed an overall mean relative risk of death of 1.7 in work-related injuries (1.7 cases per 100,000 working men and women in the workforce), but in agriculture and forestry, this figure was 23.5 (23.5 cases per 100,000 working men and women). This was the highest rate for any group in the Swedish workforce. In second place came the construction sector, with a relative risk of 5.9 (5.9 cases per 100,000 working men and women). The age of those who met with an injury was also higher in agriculture and forestry, and 56% of those who died from work-related injuries in this sector were 55 years old or more (Swedish Work Environment Authority, 2008).

As age increases the positive and negative influences on the potential for injury and ill health of farmers, it is relevant to reflect on the concept of aging. Aging usually involves a decrease in physical strength and stamina that starts before 40 years of age (Kilbom and Torgen, 1996). An investigation using the Work Ability Index (WAI) showed decreasing work ability with increasing age for people in physically demanding occupations (Pohjonen, 2001). There is sometimes a stereotypical attitude toward senior workers, who may be perceived as being slower and not interested in learning new things. On the other hand, they are also perceived as being more loyal and truthful than their younger colleagues (Warr, 1994). Because of their age, seniors have been exposed to an external lifestyle and environmental influences for a longer period, and this may increase the risk of diseases (WHO, 2002). Approximately 40% of variations in musculoskeletal strength are due to hereditary factors, but this could improve with physical exercise (National Board of Health and Welfare, 2001).

Cognitive structures such as knowledge, skills, and experience do not automatically decrease with age (Hallsten, 1996). Instead, cognitive information for processing ac-

tivities that the person already knows something about usually increases with age, but new activities take a longer time to learn and understand. A Canadian study established that information, education, and changes in the work process may decrease fatal injuries among senior farmers (Blahey, 2002). It is important to bear in mind the preventive contribution of the work environment, whereby working into old age is actually positive for some people's health and well-being because they are in a socially and physically active situation (Takashi, 2003). Increasing age and associated increasing experience can also have the potential to increase worker effectiveness. For example, a study of typists by Salthous (according to Hallsten, 1996) established that young people hit the keys more times per minute, but that older people read the text in such a way that their typing is ultimately more effective, and therefore as fast as that of the younger typists.

Objective

The aim of this study was to examine the connection between senior farmers and work injuries. Specific objectives were to determine whether senior farmers experience more work-related injuries, whether some accidents happen more often in the older age group, which part of the body is most frequently injured in different age groups, and what can be done to decrease the risk of injury for senior farmers.

Materials and Methods

The study is based on data collected in a comprehensive survey of work accidents in agriculture and forestry in 2004 (Pinzke and Lundqvist, 2007). The data were collected by a mail survey and telephone interviews. The sample included farm owners in 2004 with at least 2 ha of arable land, with large herds of livestock (at least 50 cows, 250 cattle, 50 sows, 250 pigs, 50 ewes, or 1,000 fowl, regardless of the size or arable land), and enterprises with horticultural production (outdoor cultivations of at least 0.3 ha or enterprises with at least 200 m^2 of greenhouse area). The sample frame was constituted from the 2003 Swedish Farm Register (LBR). The total number of registered farms was 67,061, and a stratified sample of 7,000 individuals was drawn from this to reflect the normal distribution of farms in Sweden. The selected group received a mail questionnaire with 14 questions, and 81% (5,646 farmers and legal persons) responded to the questionnaire after two reminders. One of the questions was: "Did any accidents occur on the farm during 2004?" In the study, "accident" was defined as a sudden incident that resulted in bodily injury and hindered the farmer in daily work. Those who responded in the affirmative to this question (a total of 393 farmers) were contacted for a telephone interview. Altogether, they reported 460 accidents involving the farmer, an employee, a family member, etc. The telephone interview consisted of 10 questions about the event, the injury, and healthcare contact for every reported accident on the farm.

The response rate in this study was comparable with the total population of farmers in Sweden in 2005. This number amounted to 61% of the respondents and 62% of all farmers in Sweden who were older than 50 years. Among the respondents in the mail survey, 32% were 50-59 years old, and the percentage of this age group among all farmers in Sweden was 28%. Taken together, 34% of farmers in Sweden were 60 years old or older in the year of the study, and this age group was represented by

29% of respondents in the mail survey. Of the injured farmers who answered the telephone interview, 38% were 49 years old or younger, 38% were 50-59 years old, and 24% were 60 years or older. This created a data set in which the proportion below and above 50 years was approximately the same as in the total group of farmers in Sweden. The final sample consisted of farmers with agricultural, combined agricultural/forestry, horticultural, and other businesses related to agriculture, excluding legal persons. This gave 223 respondents, which constituted the sample in this study. The data were analyzed by cross tables in SPSS, descriptively presented as percentage by age group, and statistically analyzed by the chi-squared test.

Results

In this study, 4% of the 5,062 farmers surveyed had been injured in work-related accidents during 2004. The injury frequency between the age groups was 4% of those age 49 or below, 5% of those age 50-59, and 4% of those age 60 or above (table 2). Mostly men work in the farming sector: among those injured in this study, 97% of those age 49 years or below, 93% of those age 50-59, and 98% of those age 60 or above were male. Of the injured who had farming as their main business (work more than 20 hours per week on the farm), 80% were age 49 years or below, 81% were age 50-59, and 75% were age 60 or above. Of those who had suffered their injuries outdoors, 57% were age 49 years or below, 65% were age 50-59, and 68% were age 60 or above.

Seventy-nine percent of the farmers injured had been severely injured to the point that they had to seek medical help. From an age perspective, 85% of those age 49 years or below, 71% of those age 50-59, and 81% of those age 60 or above sought medical help.

Forty percent of the interviewees below 49 years of age and 35% of those age 50 or above did not miss a single day of work because of their injury. The age group of 60 years or more had the highest proportion of days off work, 51 to 350 days (fig. 2). Of the injured farmers, 65% of those age 49 or below, 70% of those age 50-59, and 70% of those age 60 or above did not apply for sickness benefits from the Swedish Social Health Insurance system. Of those in the oldest age group, 17% were not eligible for state sickness benefits because of age restrictions in the system.

In this study, 22% of those age 49 years or below, 11% of those age 50-59, and 21% of those age 60 or above reported the injury that they incurred as a work injury to

Table 2. Frequency of reported injuries and characteristics of injured farmers by age group.

	Age Group			
	49 or Below	50-59	60 or Above	Total
Injury frequency in one year for 5,062 farmers surveyed	4%	5%	4%	4%
Number of injured farmers	86	84	53	223
Characteristics of injured farmers:				
Farming as main business	80%	81%	75%	79%
Male	97%	93%	98%	96%
Female	3%	7%	2%	4%
Indoor injury	43%	35%	32%	37%
Outdoor injury	57%	65%	68%	63%
Sought medical help for the injury	85%	71%	81%	79%

Figure 2. Percentage of injured Swedish farmers in different age groups missing different periods from work because of injury.

the Swedish Work Environment Authority. The most common events leading to injury of the respondents in all age groups consisted of being hit or kicked by animals, followed by injuries involving moving vehicles and machines, and being hit by falling/flying or sharp objects (fig. 3). Hits or kicks by animals and vehicle injuries were particularly common in the oldest age group.

Some parts of the body were more susceptible than others (fig. 4). The most common parts of the body to be injured were the hands-wrists-fingers, hips-legs-knees, and ankles-feet-toes, followed by head-face. For the oldest age group, the ankles-feet-toes were the most common parts to be injured in work-related accidents.

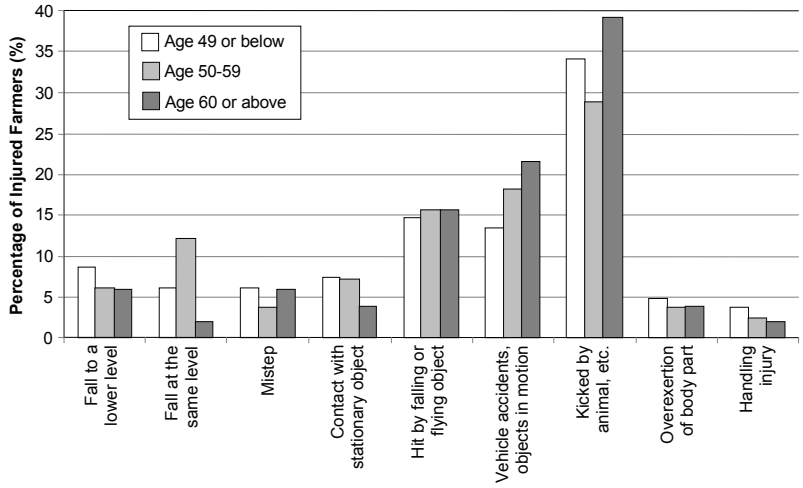

Figure 3. Percentage of injured Swedish farmers in different age groups suffering injuries due to different causes.

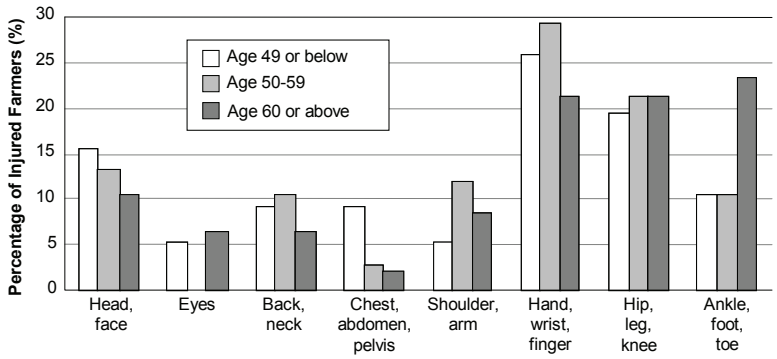

Figure 4. Percentage of injured Swedish farmers in different age groups suffering injuries to different parts of the body.

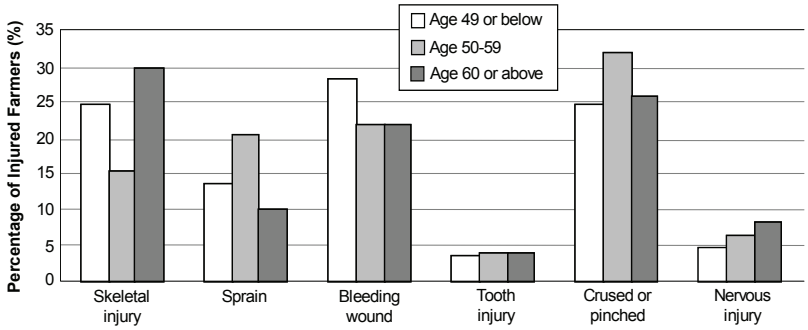

Figure 5. Percentage of injured Swedish farmers in different age groups suffering types of physical damage.

Skeletal injuries, crushed or pinched soft tissue injuries, and bleeding wounds, in that order, were the most common injuries in the oldest age group (fig. 5). In the age group of 50-59 years, crushed or pinched soft tissue injuries, bleeding wounds, and sprains, in that order, were the most common injuries. In the age group of 49 years or below, bleeding wound injuries were the most common, followed by skeletal injuries and crushed or pinched injuries.

Discussion

Farming is the most hazardous job in Sweden, being burdened with many work-related injuries, too often with a fatal outcome (Swedish Work Environment Authority, 2008). People in physically and mentally demanding occupations generally retire early from working life because of the nature of the work (Kilbom and Torgen, 1996; Pohjonen, 2001; Ilmarinen, 2003). However, many farmers work until they reach an advanced age (Reed et al., 1998; Hernandez-Peck, 2008). This study examined the occurrence of work-related injuries in Swedish agriculture for different age groups, particularly senior farmers. The majority of Swedish farmers are male; as a consequence, most of the injured farmers in this study were male. In terms of frequency of work-related injuries, this study showed a similar frequency between the age groups,

but the oldest group seemed to need a longer period for rehabilitation after an injury, as there were more senior farmers who reported 51 to 350 days off work due to their work injury (fig. 2). A previous study has also shown that senior farmers are not more frequently injured than farmers in other age groups, but that the injuries they incur are more severe (Myers et al., 2009).

All the senses (hearing, sight, smell, taste, and touch) decrease with age, and seniors tend to have a higher prevalence of medication use for a complaint or disease. The physical and mental demands accumulated throughout a long working life can also take a toll on the worker during the final years before retiring (WHO, 2002). Risk factors such as decreased vision, hearing, and musculoskeletal function occur as a result of the natural aging process (Myers et al., 2009). Some kinds of injuries in farming appear to happen more often in the oldest age group, e.g., injuries to feet and ankles, skeletal injuries, etc. (figs. 4 and 5). Many older workers may have weaker constitutions, and are more likely to meet with injuries than when they were younger (Mitchell et al., 2002). Senior workers could perhaps equip themselves with shoes or boots that can better support their aging ankles and thus prevent injuries. However, work-related accidents can vary considerably, and some parts of the body are more vulnerable than others for different age groups (fig. 4). The type of injury could make a difference concerning the severity and the time needed to heal, but a weaker constitution due to physiological aging generally increases the time needed to heal.

Working into old age can be a risk factor because of physical deterioration, but the work itself can also have a positive influence on the health of senior farmers. It has been demonstrated that work has a positive effect on the health of seniors who are still working, as they are still in a socially and physically active situation (Takashi, 2003). It is therefore important to increase risk awareness and perform preventive measures in the farm work environment to exclude injuries without excluding senior farmers.

In this study, there were no major variations between younger and older farmers in terms of seeking medical care or being absent from work because of injury. The stereotypical picture of old age is that older workers are more reliable (Warr, 1994). Senior farmers tend to work even when they are injured or ill (Voaklander et al., 1999), and they are reportedly loath to seek medical care (Reed et al., 2008). The present study established that a large proportion of interviewees did not report injuries to the authorities. It is recognized that farmers accept risks and injuries as a natural and inevitable part of the job, especially those who have grown up on a farm (Farmsafe Australia, 1999). Nevertheless, it is important to report work-related injury to the authorities if the statistics on farm accidents are to be reliable and if injured farmers are to receive compensation through the insurance system. There is a culture in agriculture whereby farmers feel they need to appear tough and strong, even in the event of accidents and injuries (Nilsson, 2009). This may lead injured farmers in all age groups to deem it unnecessary to stay home or to report their injuries to the authorities.

Many of the farmers in this study were responsible for the care of others, namely the animals on the farm, despite incurring an injury. Stockmen sometimes seem to sacrifice themselves and their health for the well-being of their animals (Kolstrup, 2008), which suggests that farmers have a work situation resembling that of "human service workers" who take care of vulnerable groups in the community (such as children or seniors) and are exposed to special work environment risks (Lipsky, 1980; Jönsson, 2005). This circumstance does not seem to be due to the farmer's age but to

the nature of farm work, with farmers prioritizing responsibility for the business and the animals in their care over age.

Danielsson (2000) and SRSA (2007) have shown that seniors in Sweden are generally more often injured and involved in accidents, so it was surprising that older farmers in this study were not injured more often than those in other age groups. It has been established that people with experience and increasing age plan and organize their work in a better way than younger people (Hallsten, 1996). Knowledge gained after a long working life probably leads farmers to work in a way that avoids risks and dangerous situations and protects their health, and this may have been why senior farmers in this study were not injured more frequently. Another fact that needs to be considered in light of our results is that fewer farmers in the oldest age group work full time (Statistic Sweden, 2009b). Therefore, it is possible they were not exposed to risks for as many hours as those in the younger age groups. Yet another confounder could be that some senior farmers with chronic injuries had already retired from farming, and were thus excluded from the survey, or had chosen a farming enterprise with a lower risk of injury, e.g., arable instead of animal rearing (healthy worker effect).

Conclusions

Senior citizens are generally more often injured and are weaker than younger people, according to official research and injury statistics. However, this study found similar numbers of work-related injuries between different age groups of farmers. Most of the senior farmers who participated in the study still seem to be going strong despite their injuries, and they are still active members of the workforce. However, the senior farmers reported a greater number of skeletal injuries and tended to be off work for a longer period after an injury. The senior farmers also tended to suffer more from outdoor injuries, hits and kicks from animals, and vehicle injuries, although the differences between the age groups were not statistically significant.

There are ways to decrease the risk of injury to senior farmers. Seniors in general have to bear in mind that they are no longer as young or quite as strong as before, and they should not take unnecessary risks. Due to the greater risk for injuries in farming, it is important to educate senior farmers about how to work safely, and the relevant authorities should continue to promote a safer working environment for this injury-prone sector. Farmers in all age groups should be careful and consider the risk of accidents, but owing to their slower healing, slower reactions, aging bodies, and failing senses, senior workers probably need to be even more careful to avoid accidents. It is recommended that senior workers wear work shoes or boots designed to reduce ankle-feet-toe injuries, which are more common in this age group. Education focusing on the special situation of senior farmers can lead to a greater awareness among this group of the particular hazards that they face due to their increased age.

Acknowledgements

The study was funded by The Swedish Farmers' Foundation for Agricultural Research and was performed by the Swedish University of Agricultural Sciences in cooperation with Statistics Sweden.

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