

Survey of Adolescent Injuries on California Farms

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Introduction

- 1.9 million children (<20 y) on US farms (Myers & Hendricks, 2001)
- Agricultural injuries cause approximately 100-150 childhood deaths annually (Rivara, 1997; Adekoya & Pratt, 2001)
- US mortality $9.3/10^5$ [Goldcamp, et al. 2004]
- 32,000 nonfatal injuries (nearly half of which are work-related) annually among children on US farms. (USDA, 1999)
- Up to 40% left with permanent disability (Reed & Claunch, 2000).

Introduction

Children in Agriculture

- Agricultural labor among children
 - Fair Labor Standards Act (1938) has looser standards for agriculture than for other industries.
 - There are no relevant laws preventing agricultural work by children on the family farm.

Introduction

Childhood injury risk factors

- Age:
 - Peaks around 4 and 14-16 [Stueland 1991, Cogbill 1985]
- Gender: Boys at greater risk than girls
 - Boys 80% of fatalities [Goldcamp et al., 2004]
 - CA mortality 1.2 vs. 0.4/10⁵ [Schenker 1995]
 - Boys more likely to be injured by machinery, girls by animals [Stueland 1991]

Introduction

Childhood injury prevention

- Engineering
- Regulation and enforcement
- Education
 - Parents and family (father plays key role)
Marlenga 2001
 - School
 - Organizations: FFA, 4-H

Introduction

UC Davis High School Farm Injury Study

Introduction

Aims:

1. Characterize injury and work experience among California farm children.
2. Examine effect of school-based agricultural-safety education program on injury risk.

Material and Methods

- We visited 10 rural California high schools with programs in agricultural studies.
- We met with staff and students at each school at least twice.
 - First time to talk to the students about the study and handout parental consent forms
 - Second time to collect consent forms and give participating students the survey

Materials and Methods (con't)

- Survey addresses the following:
 - Demographic characteristics
 - Health status
 - Safety habits
 - Sources of agricultural safety information
 - Smoking and respiratory history
 - Work history and injury experience

Results

Current Status

Entering Year 4 of data collection

1787 total participants

Response in initial phase (2001-2002, 2002-2003) approximately 40% (active parental informed consent)

Response in later phase (2003-2004) >90% (passive parental informed consent)

Results

Demographic Characteristics (2001-2002, 2002-2003)

- 644 participants
- 68% Male
- Median age 16 y
- 90% Born in USA
- 63% White, 28% Hispanic

Results

Farm and Work Characteristics

- Of the 644 participants, 38.4% live on a farm
 - Mean farm size 670 acres
 - 27% raise only livestock
 - 60% raise only produce
- Hours worked on a farm
 - Average weekly hours varied between 13 (Winter) and 28 (Summer)

Results

Farm and Work Characteristics

- Tractor use
 - 70% reported using a tractor (mean 300 h/y)
 - Mean age 11 y at debut
 - 43% of tractors with roll-bar protection structure
 - 17% always or nearly always use seatbelt

Results

Farm and Work Characteristics

- 71% feed large animals
 - Mean age 9.6 y at debut
- 31% mix chemicals
 - Mean age 13.2 y at debut
- 40% apply chemicals
 - Mean age 12.9 y at debut

Results

Sources of safety information

- Father: 61% cited as very important
- Mother: 53% cited as very important
- HS teachers: 41% cited as very important
- FFA: 39% cited as very important

Results

Safety attitudes (% agree/strongly agree)

- Inevitability of injury: 77%
- Less careful with time pressure: 74%
- Safety necessary, even if it slows job: 94%
- Less likely to be injured: 48%

Results

Safety habits (for preceding year)

- 68% ride in back of uncovered pick-up truck
- 76% always/nearly always use car seat belt
- 51% ride motorcycle
 - 54% always/nearly always use helmet
- 53% ride All-Terrain Vehicle (ATV)
 - 40% always/nearly always use helmet
- 11% always/nearly always use ear plugs
- 19% always/nearly always use respirator

Results (con't)

- Injury within the preceding year characterized by the need for medical attention or lost or restricted activities was reported by 67 (10.4%) participants
- Animal injuries 27 (40%)
 - Cattle 13 (19%)
 - Horse 8 (12%)
- Tractors 6 (9%)

Results (con't)

Correlates of Injury

- Injury was associated with the following:
 - Living on a farm (OR 2.12; 95%CI 1.27-3.54)
 - Currently smoking (OR 2.32; 95%CI 1.02-5.27)
 - Riding in pickup truck bed (OR 1.80)
 - Motorcycle or moped use (OR 1.87; 95%CI 1.08-3.23)
 - ATV use (OR 1.97; 95%CI 1.12-3.50)
 - FFA membership (OR 1.47; 95%CI 0.68-3.17)
 - Hours worked on a farm

Results (con't)

Correlates of Injury (continued)

- A protective effect was noted for:
 - Seatbelt use (OR 0.26)
 - Hispanic (vs. NH-White) (OR 0.64)
 - College-educated parent(s) (OR 0.56)

Discussion

Conclusions

- Farm work is common and begins at an early age among these students
- Most students were not limited in the types of activities they performed

Discussion (con't)

Conclusions (con't)

- The most important sources of safety information were the students' parents
- Injury risk increased for students who reported unsafe habits
- These habits may characterize an "accident-prone" or high-risk individual

Discussion (con't)

Limitations and Caveats

- Findings are preliminary
- Selection bias is possible
 - Related to low response rate
- Study data represent subjective survey responses
 - Validation of work exposure and injury experience is not feasible
- The recall period for an injury in this survey is one year
 - More severe injury cases may be easier to recall than less severe yet still reportable injuries

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