

Young Workers at Risk When Working in Agricultural Production

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INTRODUCTION

Workers in the agriculture industry have consistently been identified as being at high risk of death and injury [NIOSH, 1993; Runyan, 1993; NSC, 1997; Ruser, 1998]. Production agriculture, a segment of the agriculture industry, is the sector which commonly represents farming. Production agriculture has been shown to have higher rates of fatalities than the agriculture industry as a whole [Myers and Hard, 1995; U.S. DOL/BLS, 1996]. Studies have shown young workers in agriculture to incur more serious injuries and a greater proportion of injury than the general young worker population [Hoskins et al., 1988; Heyer et al., 1992; Belville et al., 1993; Castillo et al., 1994; Rivara, 1997]. Reasons for the higher rates have been suggested as being inexperienced in the job/work method, a more hazardous work environment, and risk taking behavior due to a feeling of invincibility by young workers [Pollock and Landrigan, 1990; Murphy, 1992; Cotten, 1997; Pratt and Hard, 1997]. The purpose of this study was to determine the fatality rate for young workers in the agriculture production industry and identify the associated mechanisms of injury leading to death.

METHODS

Using two occupational fatality data bases, the National Traumatic Occupational Fatalities (NTOF) and the Census

of Fatal Occupational Injuries (CFOI), deaths of young agricultural production workers were identified and analyzed. The NTOF is a death certificate-based census of occupational fatalities maintained by NIOSH which includes workers of 16 years and older [NIOSH, 1993]. The years 1990-1993 were used from NTOF for analysis since these were the years which had detailed industry and occupation codes. The CFOI is a multiple record-based census of occupational fatalities maintained by the U.S. Bureau of Labor Statistics (BLS) and the years 1992-1995 were the years available from CFOI. CFOI includes deaths to workers of all ages. Employment estimates for calculating fatality rates were derived from the Bureau of Labor Statistics Current Population Survey (CPS), which allows for national estimates of age-specific employment down to age 15-years. While CFOI includes deaths of workers under the age of 15-years, it is not possible to identify these deaths due to the way CFOI codes age groups. Thus, the fatality rates for the CFOI are slightly inflated.

RESULTS

The national fatality rate for all U.S. private sector workers during 1990 through 1993 was 4.4 deaths/100,000 workers based on the NTOF. The rate from CFOI for the years 1992-1995 was 5 deaths/100,000 workers. The agricultural production fatality rate for young workers in NTOF was 12/100,000 and 16.6/100,000 for CFOI. Both surveillance systems indicated that young agricultural production workers have about a 3-fold greater risk of fatal injury as compared to the national private sector worker rate. Within the agricultural production industry, workers < 25-years old have, in general, lower fatality rates than workers older than 25-years, although these young workers had a slightly higher fatality rate than workers 25- to 34-years of age

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(16.6 and 15.2 deaths/100,000 workers respectively) based on CFOI.

Males comprised the vast majority of deaths in both surveillance systems, with females accounting for 3.4% (NTOF), and 1.8% (CFOI) of the total fatalities was found among young agricultural production workers. Males had a fatality rate five (NTOF) to eleven (CFOI) times greater than females.

Farm tractors were the leading source of injury for workers <25 years old accounting for 18.4% of the fatalities in NTOF and 23.2% of CFOI fatalities. Trucks were identified as the second leading source (13.6%) of fatal injury for young workers by the CFOI with “other agricultural and garden machinery” being ranked third (7%). NTOF identified water as the second leading source (8.8%) of injury for young workers, with trucks as the third most common source (8.2%). The leading injury events identified in NTOF were nonhighway overturns (9.5%), caught in running equipment or machinery (8.8%) and drowning (8.8%). For CFOI, the leading injury events were nonhighway overturns (13.2%), caught in running equipment or machinery (9.2%) and highway overturns (8.3%). In the CFOI surveillance system, workers under 25-years of age were at a slightly higher risk of truck-related deaths than workers 25- to 34-years of age (2.7 and 2.5 deaths/100,000 workers, respectively). Further analysis of the source of injury by the injury event found that the majority of the tractor fatalities resulted from overturns (62.9% of the NTOF and 60.3% of the CFOI tractor fatalities for young agricultural production workers). The second leading source of injury in CFOI (trucks) had the most common injury event of nonhighway overturns (16.1%) and for the third leading source of death (other agricultural machinery) in CFOI the majority of the deaths were due to “caught in running machinery or equipment” (43.8%). NTOF identified water as the second leading source of deaths with drowning or submersion being the sole event associated with these fatalities. The third leading source of injury resulting in death found in NTOF was trucks with being “struck by a vehicle or mobile equipment in a nonroadway area as a pedestrian” was the leading fatality event (33.3%).

CONCLUSIONS

Young agricultural production workers have a three-fold greater risk of death than private sector workers nationally. The male/female gender composition of fatalities among young agricultural production workers is similar to other studies of adults [Myers and Hard, 1995]. Farm tractors were the leading source of fatalities for young agricultural workers in both surveillance systems, with overturns being the most frequent event. Trucks were the second leading fatality source for CFOI and the third for

NTOF. Events leading to deaths involving trucks varied between NTOF and CFOI; NTOF identified being a pedestrian and struck by the truck or trailed equipment as the leading event; CFOI identified nonhighway overturns as being a leading event. The CFOI found workers under 25-years of age to be at a slightly higher risk of death than workers 25- to 34-years of age and identified truck-related deaths as one higher risk area. The increased risk for these workers <25 years old for the CFOI may be an artifact of the rate being inflated by not accounting for employment of workers <15-years of age. Agricultural machinery with resulting entanglement was the third leading source of fatality for CFOI, which highlights the continued danger of youth entanglement while working around operating machinery/equipment. NTOF identified drownings in water as the second leading source of fatalities, which is a unique risk factor for younger agricultural production workers as compared to older agricultural production workers.

Recent research indicates that fatality rates for young workers based on hours worked may be significantly higher than rates based on employment, which could increase the relative risk found among workers in this age group [Ruser, 1998]. Although young agricultural workers show lower fatality rates than older agricultural workers, their 3-fold risk increase compared to the general working population indicates that protection of this worker population is an important public health concern. Prevention efforts should concentrate on the leading mechanisms resulting in death, such as farm tractors, trucks and drownings, to reduce these unacceptable risks.

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