SAFETY SCIENCE Monitor

Special Edition 1999

Safety in Action
25-28 February 1998

Trauma Epidemiology
Article 3

VOL 3

TRAUMATIC FATALITIES RESULTING FROM UNPAID DOMESTIC WORK

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INTRODUCTION

Unpaid domestic work in and around the home is increasingly seen as being as important to society as paid employment. There are similarities between the tasks that are performed regardless of any remuneration involved. Domestic food preparation and clean-up, housework, gardening, building and car maintenance and home improvements all have parallels in the employed sector, and indeed many household tasks are being more commonly performed under a loose contractual arrangement by persons retained on a casual basis.

Improving the safety of the home environment for both paid and unpaid home workers was one of the recommendations made in the "Better Health Outcomes for Australians" publication[1]. Included in this recommendation were the activities performed by the home handyperson. For instance, electrical and plumbing work around the home are specific examples of domestic activities that are sometimes performed by individuals who may or may not have the detailed knowledge of a professional tradesperson. Individuals who perform what could be considered as 'specialist tasks' may inadvertently be putting themselves and possibly other persons who reside in the home at risk if they do not perform the task satisfactorily or in a safe manner through lack of experience and / or expert knowledge.

One of the concerns outlined in the "Better Health Outcomes for Australians" publication[1] was that messages regarding safety received in their work environment might not be translated to the home environment by individuals performing work tasks around the home. The publication states that if the 'safety culture' that may have been established in the workplace could be transferred to the domestic environment that, potentially, the number of home injuries could be reduced.

However, there is very limited information available on the circumstances surrounding fatal or non-fatal injury in domestic settings. A consideration of non-fatal injuries in the domestic setting using the Victorian Injury Surveillance System is one of the few sources of such information for Australia[2]. Without this information it is difficult to know what occupational health and safety approaches may be appropriate to the domestic setting. It is also not possible to easily identify areas for prevention activities. For these reasons, deaths of persons who were fatally injured whilst performing unpaid domestic work were included as part of a large study of all work-related traumatic fatalities in Australia. This paper presents some preliminary results from this study with the aim of identifying areas in the home environment that could be targeted for prevention activities.

Method

As part of a study of all work-related traumatic deaths in Australia, fatal incidents involving unpaid workers in domestic situations were identified and examined in detail ("home duties" deaths). Their inclusion in the study is consistent with the recommendations of the 1994 publication "Better Health Outcomes for Australians" [1]. The group of interest comprised persons who were performing duties at home (or in someone else's home) in an unpaid capacity and which might conceivably be performed by someone in a paid capacity. There was some unavoidable arbitrariness to the inclusions and exclusions, but the working definition used was based on that used in a recent survey by the Australian Bureau of Statistics (ABS), although it was not as broad as the ABS definition[3]. Home duties included were all food and drink preparation and clean-up; laundry, ironing and clothes care; other housework (such as cleaning, dusting, polishing, vacuuming, etc); gardening and grounds care (gardening, lawn care, pool care, pet/animal care); home maintenance (including home improvement and car care); some aspects of the care or minding of children or others; and other domestic activities (such as household paperwork, bills, etc). Fatal incidents during formal volunteer work and whilst travelling on public roads were excluded from this group.
Cases were all deaths which met the study definitions and which occurred in Australia between 1989 and 1992 inclusive. The deaths were identified from the coronial systems, with detailed information being collected from coronial files throughout the country and coded by a central coding team. At the time of extracting data for this report, about 80% of cases had been coded in random order. This means that these preliminary results should reasonably reflect the results for the whole group, at least for the areas with significant numbers of occurrences. Since the frequencies represent only 80% (or 0.80) of the expected final frequencies, estimated rates have been calculated by first multiplying all frequencies by 1.25 (the reciprocal of 0.80) and then dividing by the number of persons in the appropriate age or gender group in the Australian population during the study period, as determined by the ABS[4]. Rates are expressed as deaths per million person-years. Only rates based on more than three deaths are reported. Confidence intervals have not been calculated because of the preliminary nature of the data.

The place of the fatal incident was coded according to Level 2 of the National Data Standards for Injury Surveillance[5]. The mechanism of the injury was coded according to the Type of Occurrence Classification System[6], with some minor modifications.

Results

There were 218 persons identified who satisfied the study definitions of home duties. The majority of deceased persons were male (85%). Over 60% of all subjects were 55 years or older, with 23% being 75 years of age or older. This high proportion of older age subjects was particularly striking for females, of whom 41% were 75 years of age or older and 82% were 55 years of age or older (table 1).

Table 1 Home duties deaths by age and gender (% in each gender group)

Age Group	Males (n = 186) [a]	Females (n = 32)	Total (n = 218)
< 15	2	-	1
15-24	7	3	6
25-34	15	3	13
35-44	10	3	9
45-54	8	9	8
55-64	20	22	20
65-74	20	19	20
75 +	20	41	23
Total	102	100	100

[a] Total greater than 100 because of rounding.

The overall rate of fatal injury was five per million person-years. Males had nearly six times the rate of females, and the rate increased markedly with age, particularly above the age of 54. The deceased person lived at the site of the fatal incident in 77% of incidents and was visiting a relative in 12%.

Activity

Maintenance activities accounted for 59% of all male deaths but 15% of female deaths. In contrast, domestic activities accounted for 59% of all female deaths but 10% of male deaths. However, the absolute rate of death due to domestic activities was similar for males and females. In persons under the age of 65, maintenance accounted for 46% to 73% of deaths, with smaller contributions from grounds care and domestic activities. In persons above age 65, grounds care and domestic activities accounted for much larger proportions of total deaths, and in persons over 74 years domestic activities accounted for the highest rate of the three main activity categories. Car maintenance accounted for about 32% of all deaths in the 35 - 44 year age group but only 12% overall (table 2).

Place

The most common locations for the fatal incidents were the garden (32%), kitchen (9%) and garage / carport (8%). The age and gender differences largely reflected the differences seen in the activity variable. Ladders were involved in 9% of all deaths and in 20% of all deaths of persons 75 years of age or older (table 3).

Mechanism

The most common mechanisms of the fatal incidents were falls from a height (28%), contact with electricity (20%) and being hit by falling objects (12%). In younger age groups, contact with electricity was the largest single mechanism, whereas falls from a height, contact with hot objects (this category covered being burnt in fires) and contact with chemicals were the most common mechanisms in the older age groups. However, the absolute rates were highest in the oldest age group for all mechanisms (table 4).

Cause of death

The most common cause of death was head and neck injuries (25%). The majority of other domestic fatalities resulted from electrocutions (19%), chest injuries (15%), and mechanical asphyxia (11%).

Blood alcohol

Blood alcohol levels were only available for 48% of subjects, with blood alcohol levels apparently not having been taken in most of the remaining 52%. Of the 48% of subjects for whom blood alcohol levels were taken, 87% had a zero blood alcohol, 4% had a level above zero but below 0.05 g/100 ml and 9% had blood alcohol levels above 0.05 g/100 ml (ranging from 0.051 to 0.254 g/100 ml).

Table 2 Activity at the time of the fatal incident by age group and gender (incidence per 1,000,000 person-years) [a]

Activity	15-24	25-34	35-44	45-54	55-64	65-74	75+	Male	Female	Total
Maintenance/Improvements										
Home Maintenance	1.1	3.5	1.9	2.6	9.3	9.8	17.7	4.1	0.3	2.1
Car Maintenance	*	0.7	1.6	-	3.0	*	*	1.0	*	0.5
Any Maintenance	1.5	4.2	3.3	2.6	12.3	11.0	19.9	5.1	0.3	2.6
Grounds care										
Gardening	*	1.1	1.2	2.0	3.0	9.8	13.3	2.3	0.3	1.3
Any grounds care	*	1.1	1.2	2.6	3.4	10.4	14.4	2.5	0.3	1.4
Domestic Work										
Food and Beverages	*	*	-	-	1.3	1.7	14.4	0.4	0.6	0.5
Any domestic duties	*	0.9	-	*	3.0	2.3	21.0	0.8	0.9	0.9
Other/unknown	*	-	-	-	-	1.7	*	0.3	*	0.2
Total	3.9	6.2	4.6	5.7	18.7	25.4	56.4	8.8	1.5	5.1

a: * = numerator < 3; - = no observations

Table 3 Place of fatal incident by age group and gender (incidence per 1,000,000 person-years) [a]

Place	15-24	25-34	35-44	45-54	55-64	65-74	75+	Male	Female	Total
Garden	0.9	2.2	1.7	2.3	3.8	9.8	15.5	3.0	0.3	1.6
Kitchen	*	*	-	*	1.3	2.3	8.8	0.4	0.5	0.5
Garage/ carport	-	*	-	*	3.4	2.3	*	0.9	-	0.4
Shed	*	1.1	-	*	1.7	*	*	0.5	*	0.3
Other	1.1	2.2	2.9	2.0	8.5	10.4	28.8	4.0	0.5	2.3
Total	3.9	6.2	4.6	5.7	18.7	25.4	56.4	8.8	1.5	5.1
On ladder/ stairs	-	-	*	1.3	3.0	4.0	11.1	0.7	0.3	0.5

a: * = numerator < 3; - = no observations

Table 4 Mechanism of the fatal incident by age group and gender (incidence per 1,000,000 person-years) [a]

Mechanism	15-24	25-34	35-44	45-54	55-64	65-74	75+	Male	Female	Total
Falls from a height	-	*	*	1.6	6.3	11.0	18.8	2.7	0.2	1.4
Contact with electricity	1.8	2.9	1.9	1.0	1.3	2.9	3.3	1.9	0.2	1.0
Being hit by falling objects	*	1.1	*	*	3.0	2.9	4.4	1.2	*	0.6
Being hit by moving objects	*	*	*	-	1.7	2.3	3.3	0.7	*	0.3
Contact with hot objects	*	*	*	-	1.3	*	8.8	0.4	0.3	0.4
Single contact with chemicals	-	-	-	*	*	*	8.8	0.5	0.1	0.3
Falls on the same level	-	-	-	-	*	-	5.5	0.2	0.1	0.2
Equipment rollovers	-	*	*	*	-	*	*	0.2	*	0.2
Other	*	*	0.7	1.3	3.8	4.0	-	1.0	0.4	0.7
Total	3.9	6.2	4.6	5.7	18.7	25.4	56.4	8.8	1.5	5.1

a: * = numerator < 3; - = no observations

Common scenarios

There were a number of similar scenarios that repeatedly resulted in death. These included the following situations:

- persons (usually male) performing maintenance on cars which were inadequately supported and/ or choked, and which rolled or fell onto the deceased persons causing death through crush asphyxia or head injuries whilst they were under the car. Usually these persons were working alone and so there was no-one nearby to assist in lifting the car quickly enough to possibly save the person.
- persons climbing ladders (usually male), which were not adequately braced, who suffered fatal injury (usually to the head) when the ladder slipped or the person lost their balance, causing them to fall. This was a common occurrence in elderly persons.
- persons killed in fires started as a result of them leaving the stove turned on after cooking or leaving something cooking whilst they fell asleep.
- persons (usually male) performing maintenance on the home with faulty equipment or without ensuring the relevant electrical circuits had been isolated. As a result, the deceased received a fatal electric shock.

Contributing factors

Contributing factors have only been analysed for all incidents combined at this stage. This approach is limited because it doesn't provide insight into the factors leading to specific groups of incidents (such as falling from ladders), but gives an indication of the types of factors that are associated with some of the fatal incidents. Factors which contributed in a significant proportion of cases were:

- improper practice (when the deceased was performing a task in a manner which he/she knew or probably knew was unsafe or inappropriate) - 49%;
- physiological (where pre-existing illness or disability contributed to the occurrence of the incident) - 30%;
- equipment

  safety equipment (where appropriate guards or other aspects of equipment designed to prevent injury were absent or failed) - 21%;

  general equipment (where the equipment did not function properly or was misused) - 38%;
- physical factors (where aspects of the normal physical environment such as the ground surface contributed to the fatal incident occurring) - 21%;
- personal protective equipment (PPE) (where the lack of use or failure of PPE contributed to the fatal incident) - 13%;

- toxicology (where the presence of a substance, usually alcohol, in the deceased's blood was at a level which contributed to the incident occurring) - 9%.
- isolation (where the fact that the person was working alone prevented them being found early enough to avoid the incident leading to death) - 5%;
- other person (where the activities of another person contributed in a meaningful way to the incident occurring) - 5%;

Discussion

The preliminary results presented in this study identify unpaid work in a domestic setting as an important cause of mortality in Australia. Rates were markedly higher in the older age groups and were much higher in males than females in nearly all categories of activity and mechanism.

Contributing to the prevention of deaths due to unpaid domestic work activities is the ultimate aim of the study reported here. The recurrence of similar circumstances surrounding many independent fatal incidents indicates areas where preventative interventions might be usefully targeted. For example, the securing of ladders, awareness of electrical safety and appropriate support of cars being worked on could all usefully be the subject of prevention programs. The first two of these have strong parallels with paid working activity, where electrocutions and falls (many from ladders) make up a sizeable minority of work-related traumatic deaths. Prevention approaches used in the workplace to improve safety in these and other areas may well have components that could be transferred appropriately to the domestic setting.

Finally, only an overview of the factors that contributed to the fatal incidents is presented here. Although these preliminary results suggest some areas that could be usefully targeted for prevention activities, a more detailed analysis, which will be conducted once all the cases have been coded, should provide more specific information.

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