

## SHORT REPORT

# Workplace injuries in Fiji: a population-based study (TRIP 7)

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<b>Background</b>	Workplace injury rates in low and middle-income countries are known to be high. Contemporary data on this topic from Pacific Island countries and territories are scant.
<b>Aims</b>	To describe the epidemiology of fatal and hospitalized workplace injuries in Fiji using a population-based trauma registry.
<b>Methods</b>	An analysis of data from a prospective population-based surveillance registry investigated the characteristics associated with workplace injuries resulting in death or hospital admission among people aged 15 years and older in Viti Levu, the largest island in the Republic of Fiji, from October 2005 to September 2006. Incidence rates were calculated using denominator data from the 2004–05 Fiji Employment Survey.
<b>Results</b>	One hundred and eighty-nine individuals met the study eligibility criteria (including nine deaths). This corresponded to annual injury-related hospitalization and death rates of 73.4 and 3.7 per 100 000 workers, respectively. Males accounted for 95% of injuries, and hospitalization rates were highest among those aged 15–29 years (33 per 100 000 workers). Fijian and Indian workers had similar rates of admission to hospital (38.3 and 31.8 per 100 000 workers, respectively). Fractures (40%) and ‘cuts/bites/open wounds’ (32%) were the commonest types of injury while ‘being hit by a person or object’ (34%), falls (27%) and ‘cutting or piercing’ injuries (27%) were the commonest mechanisms. Overall, 7% of injuries were deemed intentional.
<b>Conclusions</b>	Acknowledging the likely underestimation of the overall burden of workplace injuries, these findings support the need to identify context-specific risk factors and effective approaches to preventing workplace injuries in Fiji.
<b>Key words</b>	Accidents; epidemiological surveillance; Fiji; workplace.

## Introduction

Globally, over 960 000 workers are injured and 1020 die each day because of occupational injuries [1], a burden likely to be underestimated due to limited information from low- and middle-income countries (LMICs) [1,2]. Yet 80% of the world’s workforce lives in LMICs where workers often face unregulated and unprotected exposure to hazards and experience a disproportionately high burden of occupational injury and disease [1,3].

Fiji is a lower-middle-income Pacific Island nation with a population of ~840 000 people [4]. Approximately 41% of the Fijian population are in the workforce, the majority of whom (28%) are employed in the agriculture,

fisheries and forestry industry [5]. While the Fiji Ministry of Health collates annual reports on workplace injuries, published epidemiological research on this topic is scant. In order to address this gap in knowledge, we used data from the Fiji Injury Surveillance in Hospitals (FISH) system to investigate the incidence and characteristics of fatal and hospitalized workplace injuries among adults in Viti Levu, the main island of Fiji.

## Methods

The FISH system was a prospective population-based surveillance registry [6] established at all 10 trauma-admitting hospitals in Viti Levu for 12 1 October 2005.

Viti Levu is the main island of Fiji with 78% of the country's population. Indigenous Fijians and Indians make up 54 and 40% of Viti Levu's population, respectively. We analysed FISH data for all individuals aged 15 years or older who died or were admitted to hospital ( $\geq 12$  h) as a result of an acute injury sustained at work. Re-admissions and hospitalizations for late effects of injury were excluded.

Eligible cases were prospectively identified from hospital admission records and the mortuary registers at the two hospitals where post-mortems are conducted. An injury surveillance form adapted from the World Health Organization (WHO) [7] captured demographic details and a minimum dataset regarding the injury.

Research assistants systematically searched the free text of clinical or autopsy notes to determine the place of injury. Cases identified to have occurred at the workplace were eligible for analysis. As the place of injury was unknown in 7% of cases of acute injury, our estimates are expected to be conservative.

Data entered into Excel 2007 spreadsheets were combined with denominator data from the 2004–05 Fiji Employment Survey [5] to compute annual population-based rates. The study received ethical approval from the Fiji National Research Ethics Review Committee and the University of Auckland's Ethics Committee.

## Results

The 189 people who met the eligibility criteria corresponded to annual injury-related hospitalization and death rates of 73.4 and 3.7 per 100 000 workers, respectively (Table 1).

People aged 15–44 years accounted for 80% of admissions. Annual injury-related hospitalization rates were highest among those aged 15–29 years (33 per 100 000 workers). Rates were relatively similar for Fijians and Indians (38.3 and 31.8 per 100 000 workers respectively).

The median length of hospital stay was 3 days (range 0–72 days), 39% of cases were admitted for 0–2 days, 40% for 3–6 days and 20% for 1 week or longer.

## Discussion

Most workplace injuries in Viti Levu involved males aged <45 years. Being hit (or struck), falls and cutting or piercing injuries were common mechanisms. For every workplace-related death, there were 20 hospital admissions.

While the study employed a prospective population-based approach and a standardized injury surveillance form, the small population base and potential year-to-year variability could influence the precision of estimates. We did not collect information about the industries, occupational roles, workplace hazards or safety measures that may influence injury risk, data on presentations

**Table 1.** Characteristics of workplace injuries resulting in death or hospital admission in Viti Levu, Fiji, October 2005–September 2006

Characteristics	Total deaths	Hospitalizations <sup>b</sup>	Total cases
	( <i>n</i> = 9)	( <i>n</i> = 181)	( <i>n</i> = 189)
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Gender			
Male	8 (89)	173 (96)	180 (95)
Female	<sup>a</sup>	8 (4)	9 (5)
Age group (years)			
15–29 years	<sup>a</sup>	81 (445)	82 (43)
30–44 years	6 (67)	64 (35)	69 (37)
≥45 years	<sup>a</sup>	36 (20)	38 (20)
Ethnicity			
Fijian	5 (56)	94 (52)	99 (52)
Indian	3 <sup>a</sup>	78 (43)	88 (47)
Other	<sup>a</sup>	9 (5)	10 (5)
Activity at time of injury	<i>n</i> = 8	<i>n</i> = 179	<i>n</i> = 187
In a conflict situation	0	9 (5)	10 (5)
Work	8 (89)	170 (94)	177 (94)
Mechanism			
Drowning/near drowning	3	<sup>a</sup>	3
Fall	<sup>a</sup>	49 (27)	50 (27)
Fire, heat, electricity	<sup>a</sup>	6 (3)	7 (4)
Hit by person or object	<sup>a</sup>	62 (34)	64 (34)
Other	0	7 (4)	7 (4)
Poisoning	0	4 (2)	4 (2)
Road traffic injury	0	4 (2)	4 (2)
Cutting or piercing	<sup>a</sup>	49 (27)	50 (27)
Intent			
Unintentional	8 (89)	169 (93)	176 (93)
Intentional	<sup>a</sup>	12 (7)	13 (7)
Severity of injury			
Minor	0	5 (3)	5 (3)
Moderate	0	153 (85)	153 (81)
Severe	9 (100)	23 (13)	31 (16)
Outcome			
Discharged	0	180 (99)	180 (95)
Died	9 (100)	<sup>a</sup>	9 (5)

<sup>a</sup>Less than three subjects per cell; data omitted.

<sup>b</sup>One case died in hospital.

outside hospitals or injuries of insidious onset (e.g. back pain). The surveillance system also lacked a validated measure of injury severity.

An international review suggests that younger workers have a higher risk of workplace injuries but fewer fatalities, possibly due to their impact resistance and ability to recover better from trauma than older workers [8]. The common mechanisms of injury in this study are broadly consistent with other LMIC studies [2]. Importantly, almost 8% of the injuries recorded in this study were deemed intentional, an aspect consistent with increasing

concern regarding workplace violence. A recent study reported that 16% of violence against women in Fiji is perpetrated by workmates [9].

Acknowledging the potential imprecision of estimates, the workplace annual injury fatality rate in this study for Viti Levu of 3.7 per 100 000 workers is considerably lower than a 2003 estimate for Fiji (19.5 per 100 000 workers) published in an International Labour Organization report of global occupational accidents [1]. Possible reasons for this discrepancy include the use of industrialized country data to estimate rates for countries such as Fiji where no published data exists, and the use of 2001 denominator data for Fiji, which is likely to be lower than expected due to the 2000 military coup disrupting employment at that time. As in other LMIC settings, under-reporting of workplace injury deaths remains a possibility.

The effectiveness of occupational safety and health (OSH) in developing countries depends on the existence of and enforcement of adequate legislations and policies, human resource development and capacity building and improvements in information systems [3].

The implementation and sustainability of effective policy and legislation in all countries, and especially in developing countries (where there are multiple competing priorities for investment of scarce resources), require a high level of political commitment [10]. There is an urgent need to review existing legislation, policies, resources and systems related to OSH to provide information and direction to implement effective strategies to prevent workplace injuries and diseases in Fiji.

### Key points

- The burden of workplace injuries in Fiji is disproportionately high among males in the economically productive age group, with 20 admissions to hospital for every death incurred.
- 'Being hit by a person or object', falls and 'cutting or piercing' injuries represented the major causes of workplace injury resulting in admission to hospital in Fiji, with 8% of events (overall) deemed intentional injuries.
- Information regarding the specific contexts, a reliable and sustainable injury surveillance system, and the implementation and evaluation of effective interventions to reduce the burden of workplace injury should be public health priorities in Fiji.

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### Conflicts of interest

None declared.

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