Incidence rates of reported work health & safety incidents & injuries in part-time & full-time Australian Army personnel

Rodney Pope
Bond University, Rodney_Pope@bond.edu.au

Dylan MacDonald
Bond University

Rob Orr
Bond University, rorr@bond.edu.au

Follow this and additional works at: http://epublications.bond.edu.au/tru_conf

Part of the Military Studies Commons, Occupational Health and Industrial Hygiene Commons, and the Occupational Therapy Commons

This work is licensed under a Creative Commons Attribution-No Derivative Works 4.0 License.

Recommended Citation

Incidence rates of reported work health & safety incidents & injuries in part-time & full-time Australian Army personnel

Rod Pope¹, Dylan MacDonald², Rob Orr¹

¹Tactical Research Unit, Bond University  ²Bond University
Introduction

- Internationally, Reserve personnel a critical element of military forces
- Often comparable duties to full-time personnel
- Little known of comparative WHS incident & injury incidence rates
- Injuries have substantial implications for the individual, & for personnel availability, operational casualty rates, budgets & more
- In Australia, the Defence Health Status Report (2000) indicated a recorded injury rate per 100 FTE military personnel 3 times as high in Reservists as in FT personnel
- No other similar research found, at a Force or Service level, internationally.
Introduction

• Key further issue: injury definition & threshold for reporting

• Injury prevention efforts much more successful if reporting threshold low:
  – Greater statistical power to detect emerging issues in a timely manner
  – Actions to address near misses, dangerous occurrences & minor injuries reduce likelihood of escalating to more serious injuries & deaths
  – Latter only possible if near misses, dangerous occurrences & minor injuries routinely reported, considered, acted upon
Introduction

• Valuable to examine reporting rates as an indicator of surveillance system utility
• Other indicators of system utility (Mckinnon et al. 2009):
  – efficient, routine & multi-purpose inputs
  – system outputs
  – achievements in timely detection & remediation of emerging injury problems
  – feedback loops
• Reporting rates inextricably linked to these latter indicators – those supplying & entering data will not do so reliably unless these indicators addressed (McKinnon et al. 2009)
Aims

1. To investigate & compare the incidence rates of WHS incidents & injuries in ARES & ARA populations, reported in the WHSCAR database

2. To compare these injury incidence rates to injury rates reported by other injury surveillance systems for comparable army populations

This research was supported by a grant from the Defence Health Foundation
Methods

- Retrospective cohort study, covering 2-yr period 01 Jul 2012 – 30 Jun 2014
- Ethics approval from ADHREC (LERP14-024) & BUHREC (RO1907)
- Abstract approved for presentation by JHC (150707)
- Incident data for ARES & ARA extracted from WHSCAR database by system administrators, & made non-identifiable before supply to research team
- Population sizes ascertained from annual Defence Agency Resources & Planned Performance reports
- Total annual numbers of ARES days served provided by AHQ
Methods

• Incidence rates for WHS incidents & injuries reported by the ARES & ARA populations in the 2-year study period calculated:
  – *per capita*
  – *per FTE* (accounting for actual days served: assumed 1.0 FTE = 232 days)

• Incident rate ratios (IRR), ARES: ARA, calculated for reported WHS incidents & reported injuries, based on *per FTE* rates

• Finally, ARES & ARA *injury* incidence rates compared descriptively with incidence rates derived from other systems for similar populations
Results

ARES and ARA Population Sizes 2012-2014

<table>
<thead>
<tr>
<th></th>
<th>ARES</th>
<th>ARA</th>
<th>Whole of Army</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 - 2013</td>
<td>14867</td>
<td>28955</td>
<td>43822</td>
</tr>
<tr>
<td>2013 - 2014</td>
<td>15200</td>
<td>29847</td>
<td>45047</td>
</tr>
<tr>
<td>Mean pop. 2012-14</td>
<td>15034</td>
<td>29401</td>
<td>44435</td>
</tr>
</tbody>
</table>
## Results

**ARES & ARA estimated person-years* of active service 2012-2014**

<table>
<thead>
<tr>
<th></th>
<th>ARES</th>
<th>ARA</th>
<th>Whole of Army</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 - 2013</td>
<td>2296</td>
<td>28955</td>
<td>31251</td>
</tr>
<tr>
<td>2013 - 2014</td>
<td>2405</td>
<td>29847</td>
<td>32252</td>
</tr>
<tr>
<td>Total pers-yrs 2012-14</td>
<td>4701</td>
<td>58802</td>
<td>63503</td>
</tr>
</tbody>
</table>

*One person-year of active service nominally estimated equivalent to 232 days of active service: 365d – 104d weekends (or ‘in-lieu’ non-service days) – 20d AL – 9d public hols
## Results

Incidence rates & IRR for reported *WHS incidents*, by Service type  
(WHS incidents per 100 soldiers per year [per 100 person-years of active service])

<table>
<thead>
<tr>
<th>WHS incident type</th>
<th>ARES</th>
<th>ARA</th>
<th>IRR (ARES: ARA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor personal injury</td>
<td>4.55 [29.10]</td>
<td>15.58 [15.58]</td>
<td>[1.87; 95% CI 1.78-1.96]</td>
</tr>
<tr>
<td>Exposure</td>
<td>0.29 [1.83]</td>
<td>5.17 [5.17]</td>
<td>[0.35; 95% CI 0.29-0.44]</td>
</tr>
<tr>
<td>Serious injury or illness</td>
<td>0.22 [1.40]</td>
<td>1.14 [1.14]</td>
<td>[1.24; 95% CI 0.96-1.59]</td>
</tr>
<tr>
<td>Dangerous occurrence</td>
<td>0.19 [1.23]</td>
<td>0.86 [0.86]</td>
<td>[1.43; 95% CI 1.09-1.87]</td>
</tr>
<tr>
<td>Near miss</td>
<td>0.04 [0.23]</td>
<td>0.15 [0.15]</td>
<td>[1.51; 95% CI 0.81-2.82]</td>
</tr>
<tr>
<td>Fatality</td>
<td>0.01 [0.04]</td>
<td>0.02 [0.02]</td>
<td>[2.78; 95% CI 0.60-12.9]</td>
</tr>
<tr>
<td>Total</td>
<td>5.29 [33.84]</td>
<td>22.91 [22.91]</td>
<td>[1.48; 95% CI 1.42-1.54]</td>
</tr>
</tbody>
</table>
## Results

Incidence rates & IRR for reported *injuries*, by year and Service type
(Injuries per 100 soldiers per year [per 100 person-years of active service])

<table>
<thead>
<tr>
<th>Years</th>
<th>ARES</th>
<th>ARA</th>
<th>IRR (ARES: ARA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-2013 (1 year)</td>
<td>4.76 [30.84]</td>
<td>16.49 [16.49]</td>
<td>[1.85; 95% CI 1.72-2.00]</td>
</tr>
<tr>
<td>2013-2014 (1 year)</td>
<td>4.78 [30.19]</td>
<td>16.93 [16.93]</td>
<td>[1.80; 95% CI 1.67-1.93]</td>
</tr>
<tr>
<td>2012-2014 (2 years)</td>
<td>4.77 [30.50]</td>
<td>16.72 [16.72]</td>
<td>[1.82; 95% CI 1.74-1.91]</td>
</tr>
</tbody>
</table>
Comparisons of WHSCAR *injury* rates with *injury* incidence rates recorded by other injury surveillance systems, in similar populations

*Current study

**ADF Health Status Report (2000) – DEFCARE dataset


Discussion

- The rates of reported incidents recorded in the Defence safety & compensation incident reporting system (WHSCAR) observed in this study of the period 2012-2014 were just slightly higher than the rates observed for FY 97/98 (Defence Health Status Report).
- The rates were much lower than rates recorded in available point-of-care injury surveillance systems.
- It is impossible to tell whether observed differences between ARES & ARA in WHS incident & injury risks are real differences or simply differences between the populations in reporting thresholds & rates – the latter is likely.
Discussion

• Point-of-care injury surveillance systems have consistently demonstrated much higher incident & injury reporting rates than safety & compensation reporting systems, where reporting is generally not directly tied to care.

• However, point-of-care systems do not readily detect some types of WHS incidents, such as dangerous occurrences & near misses.

• Higher WHS incident & injury reporting rates & lower reporting thresholds increase the volume of incident data & so increase statistical power to detect emerging problems early & prevent escalation to more serious incidents & injuries.
Discussion
• There remains an opportunity to very substantially enhance WHS incident & injury surveillance & control in the military context using:
  – hybrid, integrated approaches which ensure injuries & near misses etc are detected
  – multi-purpose data collection & entry systems to gain efficiencies (McKinnon et al. 2009)
  – smart systems which monitor emerging trends in real time against established control parameters & push alerts to commanders when but only when appropriate
  – purpose-designed response mechanisms activated when problems are detected
  – feedback loops to key stakeholders & especially data providers & data collection/entry staff (McKinnon et al. 2009)
  – command incentives for prioritisation (not for low rates! (van der Schaaf & Kanse 2004))
Discussion

• Such developments would markedly reduce actual WHS incident & injury rates, thus increasing personnel readiness & availability, as multiple demonstrations have shown.

• Such changes would greatly benefit ARA, ARES & other ADF Services alike.
References


Acknowledgement

• The Defence Health Foundation
Questions

rpope@bond.edu.au