Fatal occupational injuries underreported in Norway

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Overview

1. Background and aim of study
2. Material: two main sources: Death registers in Norwegian Labour Inspection Authority and in Statistics Norway
3. Methods: Comparing two registers by means of unique personal number of deceased, estimation of total number by a capture-recapture model
4. Results: An underreporting in both registers of 30-43%
5. Conclusions
1 Background and aim of study

• Norwegian population ab. 4.5 million, number of employees ab 2.2 million
• 2/3 of all fatal occupational injuries (OI) in Norway are recorded by the Norwegian Labour Inspection Authority (NLIA)
• The other 1/3 are recorded by authorities of aviation, shipping, fishing and oil production
• The NLIA register of fatal OI is regarded as complete
• Aim of study: to assess the completeness of the register of fatal OI at NLIA (Norwegian Labour Inspection Authority)
2 Material: two main sources

- Death register at the Norwegian Labour Inspection Authorities (NLIA)
  - based on reports from employers and police
  - fatal occupational injury irrespective of residence
  - occupational injury: only mainland based activities

- Death register in Statistics Norway (SN)
  - all deaths of residents in Norway (no non-residents)
  - occupational injuries from mainland plus air, sea, offshore
Fatal occupational injuries in Norway 1996-2006 registered in the two sources: Statistics Norway (SN) and Norwegian Labour Inspection Authority (NLIA).
3 Methods

• Comparing NLIA case-wise with Statistics Norway by means of unique personal number for
  – residents in Norway
  – mainland based activity

• Estimate true number of fatal occupational injuries in this population with a capture-recapture model
4 Results
Total registered fatal OI in Norwegian Labour Inspection Authority (NLIA) and in Statistics Norway (SN) for the period 2000-2003, N=247

Our studypopulation=43+98+73=214
Capture-recapture

- Probability of being registered by source A (SN) is the same for all (true number) fatal occupational injuries as for those registered by source B (NLIA),
- if the two sources are independent:
  - \( p_A \times \text{true number} = 141 \)
  - \( p_A \times 171 = 98 \)
  - true number = \( 141 \times 171 / 98 = 246 \)
To find true number of fatal occupational injuries of residents in Norway, employed in mainland based activities, two more registers will now be studied:

1) SN

2) NLIA

Registers in:
3) Insurance companies
4) National Insurance Administration

1 + 2 + 3 + 4 = true number 246?
Fatal occupational injuries
Annual averages vs. persons employed

- **Norway 2000-3 (NLIA)**: 43
  - Pr 100.000 (2,3 mill): 1,9

- **Norway 2000-3 estimate**: 62
  - Pr. 100.000 estimate: 2,7

- **Sweden 2000-3 (SLIA)**: 59
  - Pr 100.000 (4,2 mill): 1,4

- **Denmark 2001-4 (DLIA)**: 51
  - Pr 100.000 (2,7 mill): 1,8
5 Conclusions

• NLIA underreported (2000-3) in particular:
  – Traffic accidents (small vehicles)
  – Military personell (not in war)
  – Health and social sector

• SN underreports due to poor classification of activity

• Underreporting may lead to misinterpretation of risks

• One third of all recorded fatal occupational injuries (both sources) were due to transport accidents (V01-V99, ICD-10)

• Underreporting in NLIA may be worse for individuals who are residents abroad