Global Childhood Unintentional Injury Surveillance in Four Cities in Developing Countries: A Pilot Study

“Bangladesh, Colombia, Egypt, Pakistan”

Adnan Hyder, David Sugerman, Prasanthi Puvanachandra, Junaid Razzak, Hesham El-Sayed, Andres Isaza, Fazlur Rahmang & Margie Peden
Gcuis Study Objectives

- To determine the frequency and nature of childhood injuries in low & Middle-income countries by using emergency department (ED) surveillance data.
- To explore the risk factors for injuries.
- Data contribution to the WHO World Health Report 2008 and Country Specific Reports
Study Methodology

- **Case definition:** Any child victim of injury (<12 years) coming to ED with caregivers

- **Study sample:** Quota sampling of 500 patients for 3 months in each of the study centers
Study Methodology (Cont.)

- 10 minute survey administered by research assistant to caregivers of children 0-11 yrs in the hospital ED
  - Obtain oral consent from caregiver
  - 22 questions

- 5 minute assessment by the ED physician
  - 5 questions
  - Abbreviated injury severity score (AISS)
  - Expected disability
  - Length of stay and disposition
Core data set:

- Unlinked unique identifier, age, gender, education level
- Injury mechanism, nature, date, time and place of occurrence.
- Seat belt/helmet usage.
- Injury severity score
- Disposition of injured person
<table>
<thead>
<tr>
<th>Anatomic Region</th>
<th>Severity (0-6)</th>
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<tbody>
<tr>
<td>1. General (i.e. burn, shock, coma, skin)</td>
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<tr>
<td>2. Face</td>
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<td>3. Head and neck</td>
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<td>4. Chest</td>
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<td>5. Abdomen</td>
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<td>6. Extremities</td>
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</table>

**Severity codes:**
- 0 = NO INJURY;
- 1 = minor injury; 2 = moderate injury; 3 = severe but not life threatening; 4 = life threatening but survival likely; 5 = critical with uncertain survival; 6 = fatal

(Grade the severity of the three most severe injuries according to anatomical site)
Why we measure ISS?

- Facilitate pre-hospital triage
- Organize and improve trauma system
- Allow accurate comparison of different trauma populations
- etc...
Study Results (1)

- The study included 1559 injured children across all sites, 1010 (65%) were male.
- Most children were aged (5-11) years (60%), while only 2% were < 1 year old.
- Injuries occurred in and around the home in 56% of the cases, in street or highway (21%) and in playground in 7% of cases.
Study Results (2)

- The most common external causes of injuries were falls in 56%, road traffic injuries 22% and burns in 13% of the cases.

- Falls occurred most often from stairs or ladders; road traffic injuries most often involved pedestrians; and the majority of burns were from hot liquids.
External Causes of Injuries

- Falls: 56%
- RTI: 22%
- Burns: 13%
- Drowning: 1%
- Others: 4%
- Poisoning: 4%
Study Results (3)

- The mean injury severity score for all injuries was 7.
- The highest scores were in Near drowning or drowning (11) and followed closely by road traffic injuries (10).
- There were marked variation of the severity scores between the different study centers.
- There were 6 deaths, of which 2 resulted from drowning, 2 from falls and 2 from road traffic injuries.
- Most severe injuries among children were cuts and open wounds (22%), followed by fractures (20%), then concussion (17%).
Injury Severity Scores of the Different Injuries

- Drowning: 11
- RTI: 10
- Falls: 5
- Burns: 5
- Poisoning: 3
- Total: 7
AISS in the Different Study Centers

- **RTI**: 18
  - Bangladesh: 3.3
  - Colombia: 4
  - Egypt: 4
  - Pakistan: 4

- **Falls**: 10
  - Bangladesh: 2.7
  - Colombia: 3
  - Egypt: 3
  - Pakistan: 3

- **Burns**: 9
  - Bangladesh: 6.7
  - Colombia: 5
  - Egypt: 5
  - Pakistan: 5

- **Poisoning**: 8
  - Bangladesh: 3.2
  - Colombia: 1
  - Egypt: 5
  - Pakistan: 1

- **Drowning**: 32
  - Bangladesh: 0
  - Colombia: 4
  - Egypt: 2
  - Pakistan: 2
Study Results (4)

- The majority of injured children were treated and discharged (66%).
- One-third were admitted to the hospital (27%) and 2% required emergency surgery.
- Less than 1% died in the ED or transferred to another centre.
- Most discharged children (51%) suffered no disability; short-term disability (< 6 Ws) 36%; while 11% long-term disability (≥ 6 Ws); & 2% suffered permanent disability.
Projected Effect of Injury

Disability

- No disability: 51%
- Short-term: 36%
- Long-Term: 11%
- Permanent: 2%

Legend:
Conclusions

- The burden of childhood injuries on the studied hospitals of LMIC is substantial.
- The study illustrated the feasibility of documenting the burden of childhood injuries and of undertaking standardized child injury surveillance on the health facilities in LMIC.
- There is need for tailored injury prevention research in LMIC and to encourage the conduct of interventional trials.
Conclusions (AISS)

- **Application obstacles:**
  - Investigators compliance (incomplete data)
  - Needs comprehensive training and monitoring of the investigators

- **Disadvantages:**
  - Unable to discriminate between the impact of similarly scored injuries to other injuries
  - Suitability for widespread surveillance in LMIC?
Recommendations

- Ongoing child injury surveillance using systematic approaches is required to identify the epidemiology of injuries, their risk factors, and plan for timely interventions in the health system.

- There is need to implement appropriate injury prevention strategies based on injury surveillance results (i.e. evidence based).

- Ongoing child injury surveillance using standardized methods is needed to track injuries and their risk factors and to monitor the impact of intervention programs.
Recommendations (for ISS)

- There is need to use appropriate severity scores methods that can help in improving health system injury care and better monitoring:
  
  - Suitable methods for ED
  - Can be used in representative surveys
  - To improve injury care system by identifying fatal and serious non-fatal injury incidence.
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