Snake bites and Dog bites in Nepal

community-based studies on snake bite and dog bites

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WHO 100107
How common are snake bites?

- Swaroop and Grab, 1954
  - 500,000 bites
  - 30,000-40,000 deaths

- Chippaux JP, 1998
  - 5 million bites
  - 125,000 deaths
  - 100,000 severe sequelae
Hospital returns, even if complete, underestimate true incidence

- up to 80% of snake bite victims are treated by traditional healers (Chippaux 1982, Hati et al 1992, Snow RW et al 1994)
- In rural areas, some deaths are unrecorded or misclassified
  - Scarce health care facility
  - Lack of trained health care worker
  - Death before reaching hospital
Hospital records – No systemic reporting

- **Snakebite related death in Monoragala District of Sri Lanka 1999-2003**

  Death in Hospital (MoH) : 27
  Certified causes of death (Registrar General’s Department) : 72


- **Snakebite in Nepal, 2000**

  Ministry of Health report
  - 480 bites
  - 22 deaths

  10 hospitals of eastern Nepal
  - 4078 bites
  - 396 death

  (Sharma SK et al Toxicon 2002)
## Community based studies

<table>
<thead>
<tr>
<th>Region</th>
<th>Deaths/100,000/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Africa</strong></td>
<td></td>
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<tr>
<td><strong>Asia</strong></td>
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</tbody>
</table>
Community based studies

- Give a true picture of total morbidity/mortality **but only** in the defined population assessed.

- Results should not be extrapolated by multiplying by the country's whole population - Incidence of snake bites/dog bites may not be homogeneous.
IMPACT OF SNAKE BITES AND DETERMINANTS OF FATAL OUTCOMES IN SOUTHEASTERN NEPAL

SANJIB K. SHARMA, FRANÇOIS CHAPPLES, NILHAMBAR JHA, PATRICK A. BOVIER, LOUIS LOUTAN, AND SHEKHAR KOIRALA
Snake bites in Nepal

- Nepal - 90% of the population live in the rural area - Snake bites are an important health problem
- Cobras, kraits and Russell’s viper
- Access to anti-venoms is limited
Objectives

1. To assess the incidence, morbidity, mortality of snake bites in south-eastern Nepal
2. To identify factors associated with death among patients with snake bites
3. To assess working days loss and personal expenses due to snake bites
**Methods**

- Community-based survey: 5 Village Development Committees (VDC) totalling 78,311 people were randomly selected from 3 districts.
- 1817 households were selected by random proportionate sampling method and were visited by trained field workers.
Methods

- Data recorded (using a standardized questionnaire)
- Any occurrence of snake bites since last Dashain Festival (14 months period)
- Characteristics of the victim and circumstances of the bite
- Management (first-aid, transport, etc...)
- Outcome
- Working days lost and personal cost
Incidence

- 1817 households visited in December 2001 (10’550 inhabitants)
- 143 snake bites reported during the 14 months period
  - annual incidence of snake bites = 1’162/100’000
  - annual incidence of probable venomous bites = 604/100’000
Outcome

- 20 patients died ⇒ case-fatality rate (all snake bites): 14%
  ⇒ case-fatality rate (envenomed bites): 27%
  ⇒ annual mortality: 162/100’000

  ⇒ 368 bites
  ⇒ 03 deaths

Study 1
Outcome

Location of 20 deaths due to snake bites

- Hospital: 20%
- In the village: 40%
- During transport: 40%

Study 1
## Personal expenses of the 123 survivors

<table>
<thead>
<tr>
<th>Type of expenses</th>
<th>Number of patients who paid (%)</th>
<th>Mean cost per patient</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary and hiring</td>
<td>91 (74)</td>
<td>27</td>
<td>2457</td>
</tr>
<tr>
<td>Drugs and dressings</td>
<td>68 (55)</td>
<td>42</td>
<td>2856</td>
</tr>
<tr>
<td>Health worker</td>
<td>45 (37)</td>
<td>27</td>
<td>1215</td>
</tr>
<tr>
<td>Traditional healer</td>
<td>11 (9)</td>
<td>3</td>
<td>33</td>
</tr>
<tr>
<td>Transport</td>
<td>70 (57)</td>
<td>10</td>
<td>700</td>
</tr>
<tr>
<td>Others</td>
<td>42 (34)</td>
<td>29</td>
<td>1218</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>123 (100)</td>
<td>69</td>
<td>8479</td>
</tr>
</tbody>
</table>
Discussion

• The incidence and the mortality of snake bites appears very high in south-eastern Nepal

• 80% of deaths occur in the village or during transport → hospital-based mortality figures grossly underestimate the true impact of snake bites

• The cost of treatment for snake bites to the patient is equivalent to several months of income.
Rapid access to anti-snake venom therapy by transport of victims by motorbike decrease mortality of snake bites

<table>
<thead>
<tr>
<th>2003</th>
<th>2004</th>
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<tbody>
<tr>
<td>Rainy season</td>
<td>Rainy season</td>
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Pre-intervention survey | Intervention | Post-intervention survey

**Case-fatality rates of snake bites**

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<table>
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<tr>
<td>Pre-intervention</td>
<td>32/305 = 10.5%</td>
</tr>
<tr>
<td>Post-intervention</td>
<td>1/187 = 0.5%</td>
</tr>
</tbody>
</table>

Relative risk of fatal outcome (2004 / 2003) = 0.051 (p < 0.0001)
Conclusion

- Snakebite is a underestimated public health problem
- Effective treatment for snakebite - YES
- Rapid transport to health center - Possible
- Why people have to die in their most productive age?

We need more ASV to save lifes
Rabies in Nepal

- Dog rabies is enzootic in Nepal
- Hospital data unreliable
  - death before reaching hospital
  - not registered in many hospitals
  - no systemic reporting
How many dogbite/Rabies?

- Incidence of human rabies unknown
- Estimated - 100 cases of hydrophobia/year (MoH 2004)
- Estimated - 200 cases of hydrophobia/year (WHO, SEARO 2004)
- Post exposure prophylaxis (vaccine) cases: 30,000 - 40,000 per year (MoH 2004)
Community survey for dogbite and human rabies in Nepal

- A community survey in rural area of eastern Nepal initiated in 2006
- A simple questionnaire filled up by health assistants/volunteers
- 1948 households (10,040 persons) were screened till December 2006
Results (preliminary)

- 678 households had pet dog
- 190 dogs (28%) vaccinated
- 228 persons were bitten by dog

⇒ Annual Incidence of dog bite: 2270/100,000

- 122 (42.3%) received post exposure vaccination
- 02 persons had hydrophobia – died
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