Children Accident Prevention based on the European Injury Data Base

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1. Background
   - The health burden of injuries in Europe
   - Missing data
   - European Injury Database

2. Examples of IDB analyses as starting points for injury prevention measures
   - Head injuries - most frequent injury diagnoses in < 5-year-olds
   - Trampoline injuries
Fatal injuries are the most common cause of death among children (>1) and adolescents. In 2013 fatal injuries made up around 25% of all deaths in the 1-to-14-year-olds. The under 5-year-olds show the highest fatal injury rate among children; boys are more affected than girls. The five most common causes of fatal injuries in children are: drowning, falls from height, burns, road accidents and violence.

Data gaps

- Official statistics do not have sufficient information on the **circumstances** of injuries
- Hospital discharge registers collect data on the diagnoses of injured patients but not on **risk factors**
- Road traffic statistics only gather data on traffic accidents registered by the police and lack **injury diagnoses**
- Criminal statistics collect data only on criminal acts registered by the police, but not on **injury diagnoses** or the **context** of violence

For effective injury prevention we need the whole injury picture throughout the population, both intentional and unintentional, as well as information on the injury pattern in different settings.
IDB fills the data gap

- It is a standardized data collection at hospitals of all injured patients admitted to the accident and emergency department (A&E) or to hospital treatment (inpatients)
- Data on all injuries and age groups
- Data related to injury intent: Injuries by accidents, violence and self-harm
- Data on the circumstances of injuries
- Data on risk factors, e.g. products
- Data for population based analysis
“The database provides information on non-fatal, unintentional injuries such as home injuries, sports and leisure, workplace and road injuries; in addition to intentional injuries resulting from violence and self-harm.”

“As injuries are an important and largely preventable health problem, the IDB provides users with relevant information for public health and consumer safety policies and actions within the EU”.

https://ec.europa.eu/health/indicators_data/idb_en
IDB network

- IDB-data currently available is produced voluntarily by 18 member states in the framework of projects co-funded by the EU-Health Programme.

- The EU-database is stored by DG SANTE (Health and Food) a European Commission Dept. and managed by EuroSafe in co-operation with Swansea University.
EU: The health burden of injuries in children <15

Deaths
2,830

Hospital Admissions*
641,974

Emergency Department (A&E) Visits**
7,269,861

* Estimate of injury admissions based on IDB, Table 6.6;**Estimate of ED attendencies, Table 7.6
The injury pyramid in terms of age and gender

Figure 4.13: Crude incidence rates for all injury related ED attendances in the EU per 1000 persons by age and gender
EXAMPLES OF ANALYSES AS STARTING POINT OF INJURY PREVENTION
Example No 1: Head injuries

- Of the under 18 year-olds, young children under 5 are most at risk of being hospitalised because of head injuries (Dunning et al.\(^1\), Ellsässer\(^2\)).

- Despite the high incidence in this age group little is known about the importance of products triggering these injuries.

- To answer such questions a study was conducted by the Brandenburg Health Department in co-operation with Swansea University using the European IDB (Ellsässer et al.)\(^3\)

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Method

- A case analysis of a total of 54,001 injuries collected during a 2-year period (2013-2014) in the under 5 year-olds treated in 115 hospitals (either ward or emergency) in 18 European countries.
Europe: Head injuries and products in < 1 year-olds

- Head injuries in infants (< 1 year) make up 63% (3,486) of all injuries (5,538) in the age group.
- 65% (2,255) of head injuries were triggered by products.
Europe: Most frequent 3 products triggering head injuries in < 1 year-olds

Among infants 3 products are responsible for 37 % of all product related head injuries

<table>
<thead>
<tr>
<th>&lt; 1 (n=2,255)</th>
<th>Cases</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beds</td>
<td>459</td>
<td>20,4%</td>
</tr>
<tr>
<td>Changing tables</td>
<td>226</td>
<td>10,0%</td>
</tr>
<tr>
<td>Buggies and strollers</td>
<td>150</td>
<td>6,7%</td>
</tr>
<tr>
<td><strong>Total 3</strong></td>
<td>835</td>
<td>37,0%</td>
</tr>
</tbody>
</table>
Head injuries in toddlers (1-4 years) account for 41% (19,876) of all injuries (48,463) in this age group.

70.4% (13,991) of head injuries were triggered by products.
Europe: Most frequent products

Head injuries triggers in 1 – 4 year-olds

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Cases</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture (e.g. couches)</td>
<td>1,048</td>
<td>7.5%</td>
</tr>
<tr>
<td>Stairs, steps</td>
<td>963</td>
<td>6.9%</td>
</tr>
<tr>
<td>Beds</td>
<td>653</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>Total top 3</strong></td>
<td><strong>2,664</strong></td>
<td><strong>19.0%</strong></td>
</tr>
</tbody>
</table>

Due to the increasing growth and mobility of young children, more products become involved over time.
Lessons to be learnt for injury prevention

- Product related head injuries among young children are a crucial public health issue
- New parents should be given early advice about typical injury circumstances and specific product related injury prevention measures
Germany: Injury prevention counselling part of the 10 medical checks in primary paediatric care

- Handbook focuses injury prevention on IDB data
- According to age and development what kind of safety products should be used in the household
- To inform in person (not only handing out leaflets)
- Not to overload parents with information
- Information should be short and easy to understand
DEEPER INSIGHT INTO TRAMPOLINE ACCIDENTS (IDB GERMANY)
Method

IDB 2008-2016

- Case analysis of medically treated 18,343 injuries in the under 18-year-olds, of whom 71.5% were product related
- We counted 137 trampoline injuries.
- Mean age 7.3 years
Age and gender distribution of trampoline accidents

- 30.7% occurred in young children under 6
- Trampoline accidents show two age peaks: in twos and 9 - 10-year-olds
- Proportion girls to boys: 52% vs. 48%
Further results

- The most frequent locations of trampoline accidents are ranked as followed: 1. outdoors (home), especially the garden, 2. leisure area (playgrounds, sport halls, trampoline parks), 3. educational institutions.

- The most frequent accident mechanisms have been: falls (55 %), jumping on a trampoline (31 %), collision with person (9 %).

- Nearly every second trampoline accident resulted in fractures. The most frequent injured body parts were: 1. forearm, 2. upper arm and 3. lower leg.
Typical injury events according to age group based on the doctor‘s narrative

- 1- year-old child: The child has been jumping on the trampoline and in a moment of not being observed hurt the right leg (fracture of lower leg)
- 4-year-old child: Jumping on a trampoline on a public playground twisted the left leg and then a loud crack (fracture of lower leg)
- 7-year-old: In sports, jumping trampoline, hit head and back (head contusion)
- 13-year-old: In a sport hall, after a somersault falls off the trampoline (upper arm and elbow fracture)
What are we seeing in the world of trampolines?

- European wide trampoline parks are spreading, so called jump houses, advertising e.g. fit jumping as a strong fat burner (up to 1000 calories per hour)
- Problem: No age limitation for children – concerns of ANEC (meeting 03/2017, Brussels)
- High risk use possible, e.g. somersaults, without any training
New product developments

- Trampolines become bigger and bigger (3 to 5 meter in diameter) inviting children to jump together → increases collision danger

Without safety net  With safety net
Next steps in Germany

Based on the results of the IDB the Association of Paediatric Professionals (bvkj) will start an information campaign in 2019 to reduce trampoline accidents:

- According to the American Academy of Pediatrics\(^1\) information why trampolines are specifically dangerous for the under 6-year-olds
- Advising against using a trampoline indoors or outdoors for children under 6
- Not attempting somersaults without supervised prior training

\(^1\)http://pediatrics.aappublications.org/content/early/2012/09/19/peds.2012-2082.short
Thank you for your kind attention
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