E-SCOOTER ACCIDENTS

overview: BELGIUM

explorative study

VAS institute
METHODOLOGY

3 REGIONS

5 EMERGENCY DEPARTMENTS

11 ASPECTS COVERED

20 MINUTES INTERVIEW
# Hospitals Invited to the Study

**Brussels:**
- **UMC Sint Pieter** claimed minor problem with no track.
- **CHIREC** has initially responded but did not participate due to lack of time.
- **UZBrussels** did not answer the invitation.

**Wallonia:**
- The remaining hospitals did not respond to the invitation.

**Flanders:**
- **Jan Palfijn an Middelheim Antwerp** claimed no cases or minor incidents with no track.
- **Stuivenberg Antwerp** referred to **UZAntwerp**.
- **UZAntwerp** requested a permission from an ethical committee but did not participate regardless of providing one.
- All hospitals in Gent referred to **UZ Gent**.
- No hospital in Leuven answered the invitation.

### Brussels Capital Region

<table>
<thead>
<tr>
<th>Location</th>
<th>Hospital Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laeken</td>
<td>CHU Brugmann - Victor Horta site*</td>
</tr>
<tr>
<td>Schaerbeek</td>
<td>CHU Brugmann- Paul Brien site*</td>
</tr>
<tr>
<td>Saint-Gilles</td>
<td>UMC Sint-Pieter Campus</td>
</tr>
<tr>
<td>Jette</td>
<td>Universitair Ziekenhuis Brussel</td>
</tr>
<tr>
<td>Auderghem</td>
<td>CHIREC Hôpital Delta</td>
</tr>
<tr>
<td>Brussels</td>
<td>Clinique Saint Jean*</td>
</tr>
</tbody>
</table>

### Wallonia

<table>
<thead>
<tr>
<th>Location</th>
<th>Hospital Name</th>
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</thead>
<tbody>
<tr>
<td>Namur</td>
<td>Hospital Center Régional De Namur</td>
</tr>
<tr>
<td>Namur</td>
<td>CHU UCL Namur De Sainte-Elisabeth</td>
</tr>
<tr>
<td>Namur</td>
<td>Clinical Saint-Luc Bouge</td>
</tr>
<tr>
<td>Liège</td>
<td>CHU de Liège*</td>
</tr>
<tr>
<td>Liège</td>
<td>Centre Hospitalier Régional de la Citadelle</td>
</tr>
<tr>
<td>Liège</td>
<td>Centre Hospitalier Chrétien Clinique Saint-Joseph</td>
</tr>
</tbody>
</table>

### Flanders

<table>
<thead>
<tr>
<th>Location</th>
<th>Hospital Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antwerp</td>
<td>Universitair Ziekenhuis Antwerpen</td>
</tr>
<tr>
<td>Antwerp</td>
<td>ZNA Campus Stuivenberg</td>
</tr>
<tr>
<td>Antwerp</td>
<td>ZNA Campus Middelheim</td>
</tr>
<tr>
<td>Antwerp</td>
<td>ZNA Campus Jan Palfijn</td>
</tr>
<tr>
<td>Leuven</td>
<td>Algemeen Ziekenhuis Heilig Hart</td>
</tr>
<tr>
<td>Leuven</td>
<td>UZ Campus gasthuisberg</td>
</tr>
<tr>
<td>Gent</td>
<td>UZ Gent*</td>
</tr>
<tr>
<td>Gent</td>
<td>AZ Jan Palfijn</td>
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<tr>
<td>Gent</td>
<td>AZ Sint-Lucas</td>
</tr>
<tr>
<td>Gent</td>
<td>AZ Maria Middelares: Campus Algemeen</td>
</tr>
</tbody>
</table>

*Hospitals that have participated*
<table>
<thead>
<tr>
<th>STUDY SCOPE</th>
</tr>
</thead>
</table>
| **INJURY TYPE** | ▪ minor  
▪ major | ▪ musculoskeletal  
▪ craniofacial  
▪ soft tissues |
| **ADMISSION** | ▪ by ambulance  
▪ by one’s own |
| **TIME** | ▪ morning  
▪ during the day  
▪ evening  
▪ night |
| **LOCATION** | ▪ bicycle path  
▪ road  
▪ pavement |
| **OWNERSHIP** | ▪ private  
▪ shared |
| **AGE** | ▪ <18  
▪ 18-30  
▪ 31-40  
▪ 41-50  
▪ >50 |
| **HELMET** | ▪ yes  
▪ no |
| **INTOXICATION** | ▪ yes  
▪ no |
| **3rd PARTY INVOLVEMENT** | ▪ yes  
▪ no | ▪ pedestrian  
▪ bicycle  
▪ car  
▪ van / truck  
▪ bus / tram  
▪ other |
| **CAUSE** | Maneuver that lead to the accident |
| **FREQUENCY** | General pattern of admission frequency |
The results of this explorative study are different to the information published in the Belgian media.

1 person/week on average arrives at the emergency room following an e-scooter accident.

2-3 persons in higher-level penetration areas.

Most of accidents involve no 3rd PARTIES. Accidents occur mostly due to fault of the user.

20-40 years old, the most affected age group.

Most of the accidents happen to OCCASIONAL USERS.

MINOR PROBLEM in Wallonia and Flanders. NO TRACK of e-scooter related accidents is being kept.
RESULTS

**time, space & weather**

- **ROAD** is the most common place where accidents occur.

- Significantly more accidents occur during the **DAY** due to higher volume of traffic.

- **BUSY & DENSE AREAS** are the most common locations of accidents.

- Number of accidents varies depending on **WEATHER CONDITIONS**.

- Some of the victims had an accident on the road even though the bicycle path was available.
RESULTS

user behavior

THE FORMER ARE GENERALLY WELL EQUIPPED WHILE THE OTHERS UNDERESTIMATE THE RISKS AND RIDE MORE RISKY

ALCOHOL & DRUG INTOXICATION is not a major problem

BUT after a certain time, a larger proportion of injured users is under influence

BIG DIFFERENCE in the behavior between users who own a scooter and others who use sharing schemes

surgeons alert: E-SCOOTERS ABANDONED on the pavement and the risk it entails on pedestrians

ACCIDENTS DUE TO THAT ARE NOT FREQUENT BUT THEY HAPPEN

NONE of the patients wore a HELMET during the accident
**Aesthetic Damages**

are very common consequences of the accident with e-scooters (facial injuries)

**Results**

Scope of injuries

- **Facial Impairment**
- **Head Trauma**
- **Abdominal Injuries**
- **Soft Tissues Injuries**
- **Bones Fractures: Upper Limbs**

Patients usually admit themselves in the ER with no involvement of an **Ambulance**

while most injuries are minor, some accidents have **very serious consequences** (e.g. head trauma)

**Most of the Accidents**

**Even Minor, Require a Significant Time of Sick-Leave**

up to 8 weeks for a wrist fraction (the most common injury)

The scope of the injuries is usually **Minor**

bones fractures with no life threat, lacerations of soft tissues

**Lower Limbs**

very rarely affected

**Occasional Abdominal Injuries**

after hitting the handlebar
Mandatory Helmets
with chin protection
and additional protection for wrists and elbows

Rising awareness of risk and good practices by
Users Training & Education

Adapt Infrastructure
with the e-scooter structure in mind
(small wheels, weight/power ratio)
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Austria</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Finland</th>
<th>France</th>
<th>Germany</th>
<th>Italy</th>
<th>Norway</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
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<tbody>
<tr>
<td>Max. speed &lt;20 km/h</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Speed regulator required</td>
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<td>x</td>
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<td>Mandatory helmet</td>
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<td>x</td>
<td>x</td>
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<td>x</td>
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<td>Reflective clothing</td>
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<td>Headphones forbidden</td>
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<td>Lights on 24/7</td>
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<tr>
<td>No riding on the sidewalk</td>
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<td>x</td>
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<td>x</td>
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<td>If roads, only up to 30 km/h</td>
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<td>x</td>
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<td>If roads, only up to 50 km/h</td>
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<td>Only urban areas</td>
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<td>x</td>
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<tr>
<td>Allowed above 18 y.o.</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>No passengers</td>
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<td>x</td>
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<td>x</td>
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SUMMARY

The results of this explorative study are different to the information published over the last months in the Belgian media. However, our findings are in line with the results of the survey conducted by Bruxelles Mobilité (summer’19) in terms of differences between users who own a private device and those who use rental schemes; the nature of accidents (minor involvement of 3rd parties) and the significance of the problem (13% who encountered an accident in the sample of 1176 users, 2,5% of users who required medical intervention).

Possible discrepancy in the results might be due to:

- **STRONG LOCATION FACTOR:** the number of accidents can vary significantly between hospitals (e.g. Brugmann Laeken report on average 1 person per week, while Brugmann Schaerbeek 2-3 persons per week).

  This is relevant also for the time of the accident and alcohol intoxication- a recent study from St. Pierre* (Brussels) discovered that over half of e-scooter accidents take place after 8:00 PM, often when users have consumed alcohol, which was not confirmed by findings from other hospitals.

- **DATA SOURCE:** a more in-depth interview with the patient might be conducted only after one is admitted to the hospital ward. Cognately, these patients would encounter more serious injuries, therefore the information coming from the ward rather than the emergency room might vary in terms of seriousness of the problem.

However, some of contacted hospital claimed the problem is not significant and there has not been enough cases to investigate it and therefore they declined their participation. This insight and the interviews conducted in Liège and Ghent confirm that the problem is valid mainly in Brussels, with larger scale in highly-penetrated areas, which suggests a correlation with an availability of sharing schemes.

The injuries, even if mostly minor, require a considerable recovery time. Furthermore, rare, but serious head traumas (craniofacial injuries) have a severe consequence. All interviewed doctors urged for actions toward increasing awareness of the importance of helmets and the relevance of the practical training before riding in urban environment.

The study was conducted in the between August and October 2019.
N O V E M B E R  2 0 1 9

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