Lehigh Valley Health Network

# LVHN Scholarly Works

# Development of a Concussion Dataset and Preliminary Analysis of Outcomes

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## Background & Introduction

- Concussions develop from rapid deceleration of the brain within the skull
  - Often from a blow to the head
- 3 main categories of symptoms: somatic, neurobehavioral, cognitive
- Patients with long-lasting symptoms (3+ months) may be diagnosed with Post-concussion Syndrome (PCS)

## Objectives

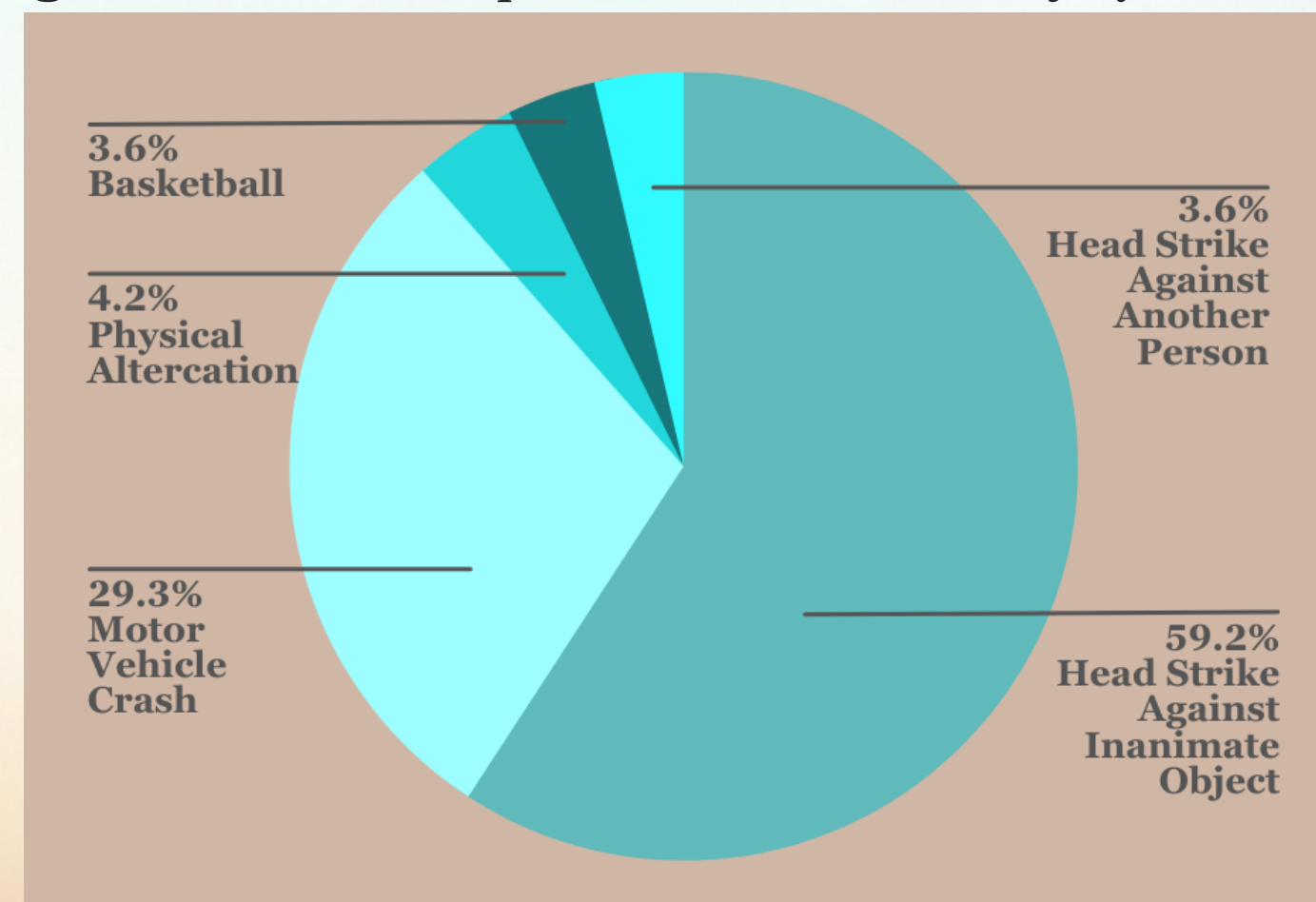| | |
|---|---|
| **1** | Develop an online database of concussion patients |
| **2** | Use said database for analysis of trends for various categories (recovery time, therapy outcomes, most prevalent cause) |
| **3** | Use findings to improve concussion understanding and protocol throughout the network |

## Methods

- Extract patient data from Epic and insert into REDCap project
  - Demographics, Concussion Info, Symptom Checklist, Therapy
- Look for trends in REDCap data

## Results

**Chart 1.** Sample demographics and information (784 entries)

| Age at Time of Encounter (Average, Median) | 32, 27 | | |
|---|---|---|---|
| CT Scan Performed | Yes: 403 (22 positive) | No: 377 | |
| History of Concussion/TBI | Yes: 172 | No: 293 | Unknown: 273 |
| Hospitalization | Yes: 400 | No: 380 | |
| Type of Therapy (Nonexclusive) | Occupational/Cognitive: 494; Physical: 536; Vision: 218 | | |

**Figure 1.** Five most reported mechanisms of injury



- 3.6% Basketball
- 4.2% Physical Altercation
- 29.3% Motor Vehicle Crash
- 3.6% Head Strike Against Another Person
- 59.2% Head Strike Against Inanimate Object

## Conclusion

- Small right skew in age range, but not drastic
- Approximately 5.5% of the CT scans performed were positive
- 21.9% have a known history of concussion/TBI
- 63.0% attended occupational/cognitive therapy, 68.4% attended physical/vestibular therapy, and 27.8% attended vision therapy
- 422 instances reported of a head strike against inanimate object
- The most frequently seen race is Caucasian

## Future Recommendations

- Use data set for more in-depth analysis on recovery times, therapies given, impact from number of head injuries
- Have providers scale patient performance on concussion tests for analysis
  - Compare visits for one patient or across multiple
  - By comparing scores by the same provider, there will be consistency between each

## References

1. Willer, B. and Leddy, J.J. (2006) 'Management of concussion and post-concussion syndrome', *Current Treatment Options in Neurology*, 8(5), pp. 415–426. doi:10.1007/s11940-006-0031-9.

## Acknowledgments

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