

Development of a Concussion Dataset and Preliminary Analysis of Outcomes

Kristen Heilenman
Lehigh Valley Health Network

Mark Cipolle MD, PhD
Lehigh Valley Health Network, mark.cipolle@lvhn.org

Follow this and additional works at: <https://scholarlyworks.lvhn.org/research-scholars>



Part of the [Medicine and Health Sciences Commons](#)

Let us know how access to this document benefits you

Published In/Presented At

Heilenman, K. & Cipolle, M.D. (2023, July 28). *Development of a Concussion Dataset and Preliminary Analysis of Outcomes*. Poster presented at Research Scholars, Lehigh Valley Health Network, Center Valley, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

Development of a Concussion Dataset and Preliminary Analysis of Outcomes

Kristen Heilenman; Mark D. Cipolle MD, PhD, MS

Lehigh Valley Health Network, Allentown, Pennsylvania

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

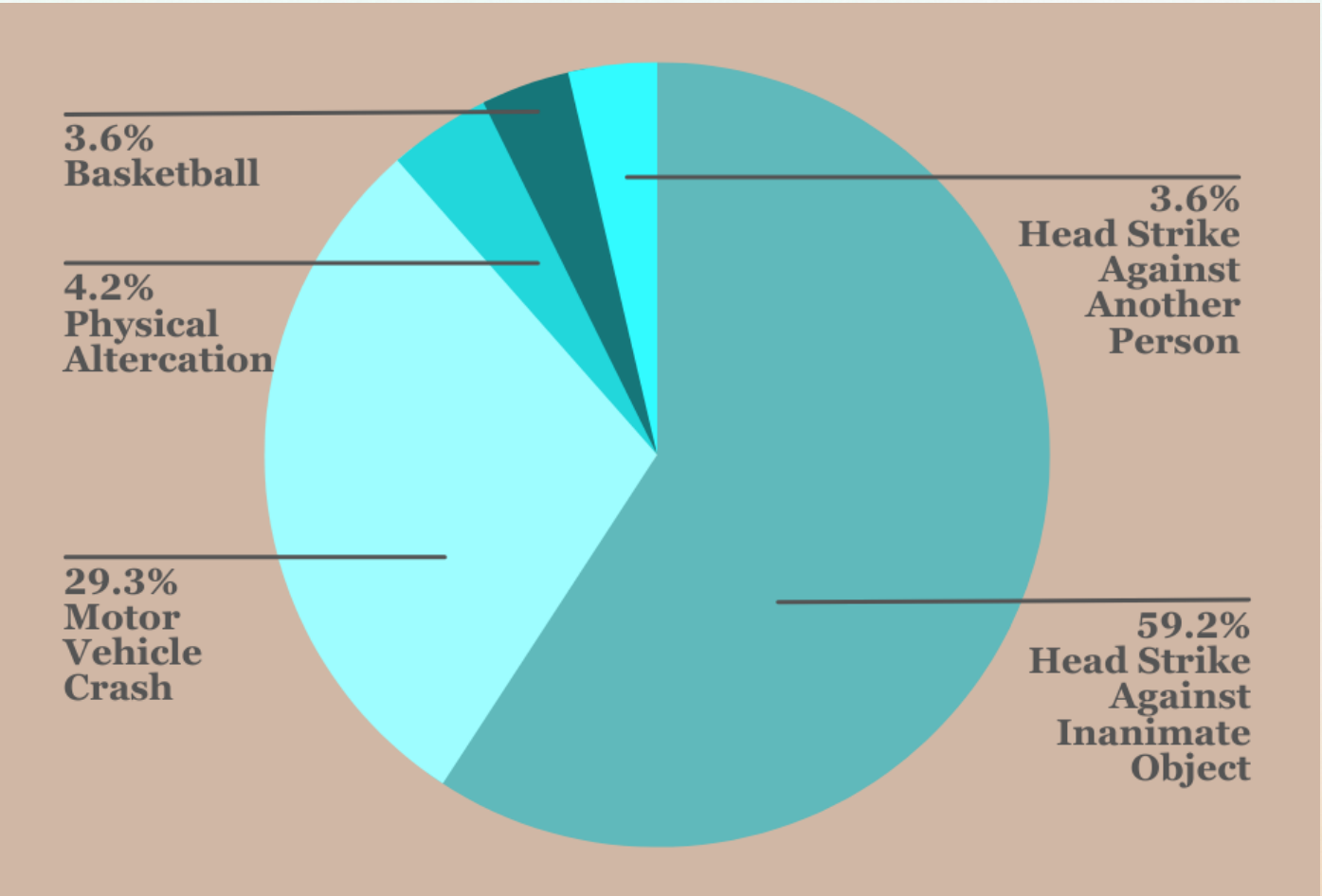
- Extract patient data from Epic and insert into REDCap project
 - Demographics, Concussion Info, Symptom Checklist, Therapy
- Look for trends in REDCap data

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



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

A special thank you to David Clark for his help and insight with data entry and the REDCap database.