

Examining The Role of Insurance Type on Disparities in Pediatric Sports-related Concussion Follow-up



Shahrukh Khan¹, Jose A. Cruz-Ayala¹, Emma Cole¹, Holly Monk¹, Dr. Alison Smith², Dr. Scott Schultz³, Dr. Lindsay Elliott³, Jessica Zagory⁴

Louisiana State University Health Sciences Center School of Medicine¹, Louisiana State University Health Sciences Center, Department of Surgery, Division of Trauma Critical Care², Children’s Hospital New Orleans, Department of Pediatrics, Division of Physical Medicine and Rehabilitation³, Louisiana State University Health Sciences Center, Department of Surgery, Division of Pediatric Surgery⁴.

Background

- Pediatric sports-related concussions are the primary cause of concussions in youth and adolescents.¹
- Children who have suffered concussions are more likely to have adverse long-term outcomes.
- Limitations in follow-up care have been shown to have longer recovery times and worse outcomes.²
- Disparities exist in the completion of follow-up concussion care, particularly among pediatric patients who are publicly insured and self-identify as black².
- Limited data is still present on whether a discrepancy in follow-up care is due to missed follow-up visits by the patient or a decreased number of follow-ups scheduled by the provider³.
- This study looks to examine those potential differences in the New Orleans pediatrics population that have suffered sports-related concussions.

Hypothesis

Children with Medicaid will be more likely to have fewer scheduled follow-ups by the provider and will have more missed follow-up visits compared to children with private insurance.

Methods

- Retrospective chart review of patients <18 years old who were diagnosed with SRC at our stand-alone children’s hospital from January 2007 to December 2021.
- Demographics (age, sex, race) and various components of follow-up care were collected.
- We performed t-test, chi-square vs Fischer’s exact) for outcomes between insurance types, demographics, and follow-up care.

Results

	Medicaid/Uninsured n = 188	Private (111) n = 111	p-value
Age (mean ± SD)	12.31 ± 2.16	12.44 ± 2.01	0.2956
Sex (N, male)	143 (76%)	61 (55%)	0.0002
Race (N, white)	65 (34.6%)	83 (74.8%)	0.0001
Length of follow-up in days (mean ± SD)	53.08 ± 133.71	34.90 ± 65.10	0.0489
Number of follow-ups (mean ± SD)	2.25 ± 1.75	2.15 ± 1.53	0.3084
Number of patients who missed appointments (N)	40 (21.3%)	10 (9%)	0.0062
Number of missed follow-ups (mean ± SD)	1.375 ± 0.77	1.3 ± 0.67	0.3902
Lost to follow-up (N)	21 (11.2%)	7 (6.3%)	0.4798
ED visits (N)	8 (4.3%)	2 (1.8%)	0.3321

Table 1 Comparison of follow-up care between insurance types.

Discussion

- Medicaid/uninsured patients were more likely to be male (p=0.0002) and nonwhite (p=0.0001). This is contrary to previous data that shows females make up the majority of Medicaid patients across all age groups.⁴
- Medicaid/uninsured patients had a longer length of follow-up (53.08 ± 133.71 vs 34.90 ± 65.10 days, p=0.0489) and more patients who missed appointments (p=0.0062).
- The total number of follow-ups between insurance types was the same (Table 1). This trend can likely be explained by Medicaid patients having more difficulty accessing these follow-up appointments⁶.
- The missed follow-ups are contributing to the increased follow-up duration because they have to be rescheduled to a later date. It does not seem to be an issue with the provider scheduling fewer follow-ups for Medicaid patients.

Conclusion

- The discrepancy in follow-up care is likely due to the increased number of missed appointments extending the follow-up period.
- These missed appointments are likely due to known causes of social disparity such as access to adequate transportation and resources.

References

1. Moore RD, Kay JJ, Ellemberg D. The long-term outcomes of sport-related concussion in pediatric populations. *Int J Psychophysiol.* 2018 Oct;132(Pt A):14-24. doi: 10.1016/j.ijpsycho.2018.04.003. Epub 2018 Apr 26. PMID: 29705573.
2. Mohammed FN, Master CL, Arbogast KB, McDonald CC, Sharma S, Kang B, Corwin DJ. Disparities in Adherence to Concussion Clinical Care Recommendations in a Pediatric Population. *J Head Trauma Rehabil.* 2023 Mar-Apr 01;38(2):147-155. doi: 10.1097/HTR.0000000000000823. Epub 2022 Oct 14. PMID: 36731016; PMCID: PMC9998329.
3. Zuckerman SL, Zalneraitis BH, Totten DJ, Rubel KE, Kuhn AW, Yengo-Kahn AM, Bonfield CM, Sills AK, Solomon GS. Socioeconomic status and outcomes after sport-related concussion: a preliminary investigation. *J Neurosurg Pediatr.* 2017 Jun;19(6):652-661. doi: 10.3171/2017.1.PEDS16611. Epub 2017 Mar 24. PMID: 28338445.
4. Ivette Gomez UR. Medicaid coverage for women. *KFF.* February 16, 2022. Accessed October 8, 2023. <https://www.kff.org/womens-health-policy/issue-brief/medicaidcoverage-for-women/>.
5. MarchofDimes. Medicaid coverage by Race: Louisiana, 2018-2020 average. *March of Dimes | PeriStats.* Accessed October 8, 2023. [https://www.marchofdimes.org/peristats/data?reg=99&top=11&stop=652&lev=1&slev=4&obj=1&sreg=22#:~:text=In%20Louisiana,%20during%202018-2020,%20Islanders%20\(46.8%25\)](https://www.marchofdimes.org/peristats/data?reg=99&top=11&stop=652&lev=1&slev=4&obj=1&sreg=22#:~:text=In%20Louisiana,%20during%202018-2020,%20Islanders%20(46.8%25).).
6. Ramsay, S., Dahinten, V. S., Ranger, M., & Babul, S. (2023). Follow-up visits after a concussion in the pediatric population: An integrative review. *NeuroRehabilitation, 52*(3), 315–328. <https://doi.org/10.3233/NRE-220216>