DECREASED NEED FOR SURGICAL INTERVENTION AMONG CHILDREN FROM AREAS OF HIGHER NEIGHBORHOOD DISADVANTAGE FOLLOWING TRAUMATIC INJURY

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BACKGROUND

- ***Risk of unintentional trauma is not equitable:*** higher injury severity and morbidity and mortality are linked to lower socioeconomic status (SES) as measured by Area Deprivation Index (ADI)
- The frequency of surgical interventions, however, are higher for children from neighborhoods with higher (SES)
- The nature of variations in surgical intervention related to SES are not well understood

OBJECTIVE

To explore this variations in surgical interventions using ADI quintile

METHODS

- ***Design:*** Single-center retrospective analysis of a pediatric trauma registry from 2016-2021
- ADI by home zip code was used to stratify patients into quintiles (***higher quintile=lower SES***)
- ***Primary outcome:*** ADI quintile and volume and type of operative intervention
- ***Secondary outcomes:*** body region injured, and injury severity were evaluated

RESULTS

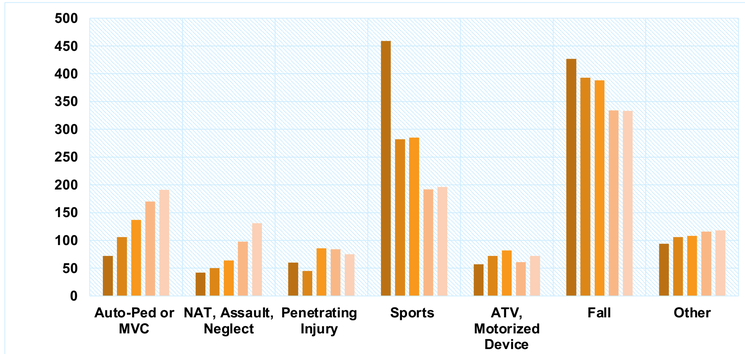

Figure 1. Injury Mechanism by ADI Quintile

Penetrating trauma, non-accidental trauma/assault/neglect, and auto-related trauma (both auto-pedestrian and motor vehicle accidents associated with increasing ADI quintile

Sports-related injuries were associated with lower ADI quintiles

Table 1. Percentage of operations performed by ADI quintile for children suffering trauma

ADI quintile	Patients (N=5655)	Surgeries (N=3378)	Neurosurgery (N=48)	Ortho (N=2253)	General (N=88)	Other (N=989)	p value
1st	1222 (21.6%)	779 (63.7%)	9 (1.2%)	547 (70.2%)	22 (2.8%)	201 (25.8%)	< 0.001
2nd	1067 (18.9%)	675 (63.2%)	11 (3.3%)	480 (71.1%)	16 (2.4%)	168 (24.9%)	
3rd	1162 (20.5%)	690 (59.4%)	12 (1.7%)	448 (64.9%)	13 (1.9%)	217 (31.4%)	
4th	1072 (19.0%)	594 (55.4%)	6 (1.0%)	374 (63.0%)	19 (3.2%)	195 (32.8%)	
5th	1132 (20.0%)	640 (56.5%)	10 (1.6%)	404 (63.1%)	18 (2.8%)	208 (32.5%)	

ADI - area deprivation index

A total of 5,655 pediatric patients suffered traumatic injuries, 3378 (59.7%) of whom underwent an operation including 48 neurosurgery (1.4%), 2253 orthopedic (66.7%), 88 general surgery (2.6%), and 989 other operations (29.3%). The percentage of operations in each category varied by ADI quintile (p<0.001)

Table 2. Percentage of body region injured by operative intervention

Body region	No surgeries (N=2277)	Neurosurgical (N=48)	Orthopedic (N=2253)	General (N=88)	Other (N=989)	p-value
Abdominal	329 (14.8%)	3 (6.4%)	18 (0.8%)	56 (64.4%)	107 (11.1%)	< 0.01
Head	886 (39.9%)	38 (80.9%)	87 (3.9%)	10 (11.5%)	255 (26.4%)	
Thorax	195 (8.8%)	3 (6.4%)	18 (0.8%)	7 (8.0%)	64 (6.6%)	
Extremities	409 (18.4%)	1 (2.1%)	2114 (94.1%)	8 (9.2%)	277 (28.7%)	
External	403 (18.1%)	2 (4.3%)	9 (0.4%)	6 (6.9%)	263 (27.2%)	

Orthopedic procedures made up 70.2% of operations in the **first** ADI quintile

Orthopedic procedures made up 63.1% of operations in the **fifth** ADI quintile

This correlates with the higher rate of extremity injury in children from areas of lower ADI quintile (56.2% of 1st quintile vs 44.1% of 5th quintile, p<0.001).

CONCLUSIONS

- Among children who suffered traumatic injury and required an operation, ***rate of operative intervention was higher among children with higher SES***
- ***Orthopedic procedures made up the majority of operations*** for all quintiles, with rate of orthopedic procedures decreasing with increasing deprivation, similar to the variation in rate of extremity injury by ADI quintile
- Future work will investigate whether injury mechanism and severity account for this apparent difference in rate of orthopedic intervention with increasing deprivation

REFERENCES

Eyal, K., Myers, E., Diaz-Miron, J., Malham, M., Orehova, J., Pickett, K., Kaar, J., Reppucci, M., Kulungowski, A., Adelgais, K., & Acker, S. (n.d.). *Area Deprivation Index Patterns in Pediatric Trauma.*