

Social Determinants Associated With Pediatric Burn Injury: A Population Based, Case-Control Study



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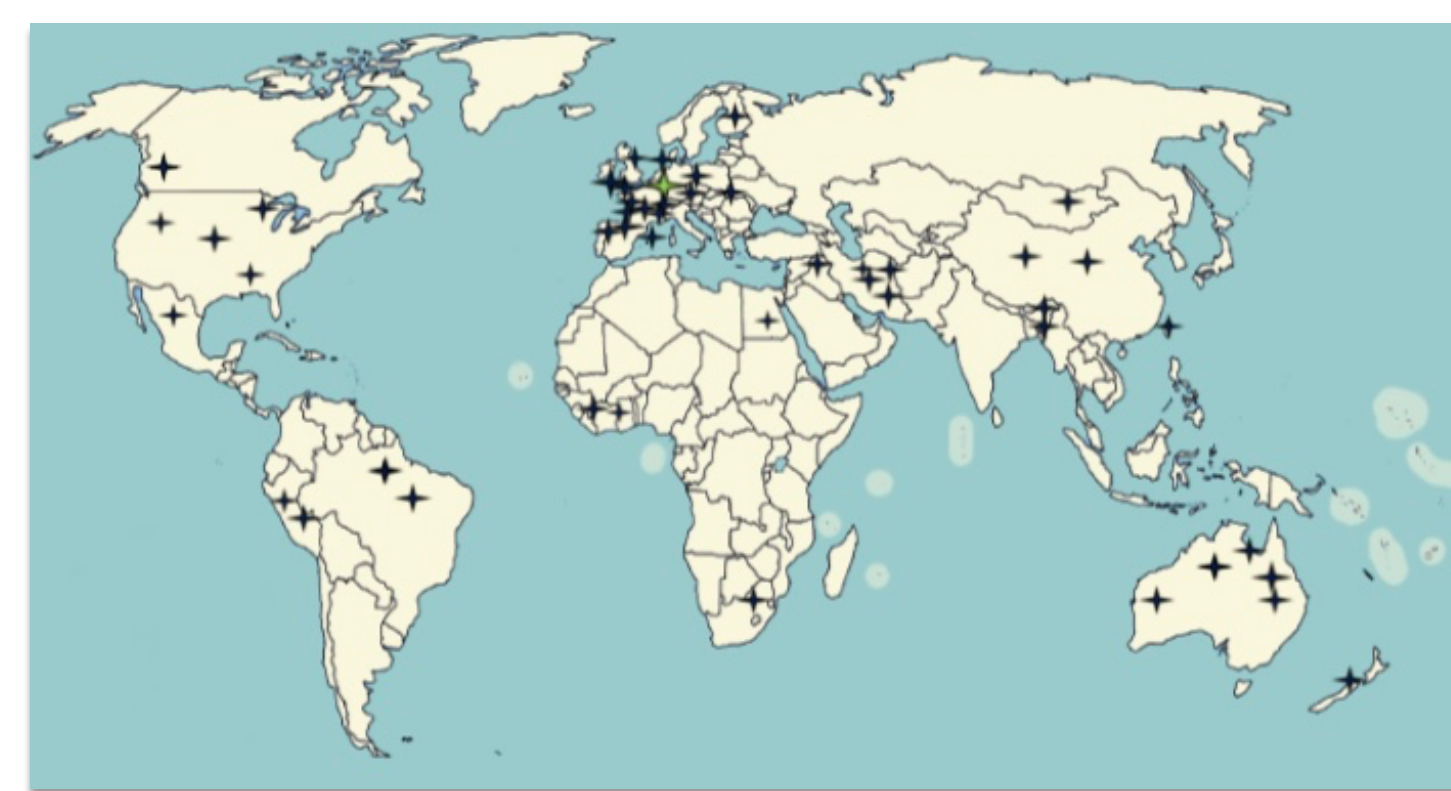
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INTRODUCTION

- Social factors are linked to increased risk of injury, adverse health outcomes and earlier mortality.
- Lifelong post-burn physical and psychological consequences
- Need to identify risk factors for burn injury in children to guide prevention strategies
- A previous systematic review by our group has demonstrated the need for Canadian data
- We present a case-control study to identify the relationship of social factors to burn risk in children
- Burn prevention programs are effective for preventing child burns¹, this research identifies the most at-risk youth to inform creation and implementation of these programs.

RESULTS

Geographic Distribution of Studies Analyzing Social Complexities and Pediatric Burn Risk



Descriptive Characteristics of Burn and Control Cohort

Demographic		Burn Cohort (n=483)	Control Cohort (n=2415)
Age	Mean +/- SD (range)	5.46 +/- 5.23 (0-17)	5.45 +/- 5.24 (0-17)
	Median; IQR	3; 8	3; 8
Sex	Male; N (%)	312 (64.60)	1560 (64.60)
	Female; N (%)	171 (35.40)	855 (35.40)
Total Body Surface Area (%)		10.5 ± (1 - 94.8)	---

Mechanism of Burn Injury

Mechanism	N (%)
Chemical	8 (1.66)
Contact	38 (7.87)
Electrical	11 (2.28)
Fire/flame	150 (31.06)
Scald	203 (42.03)
Unspecified	73 (15.11)
Total	483 (100)

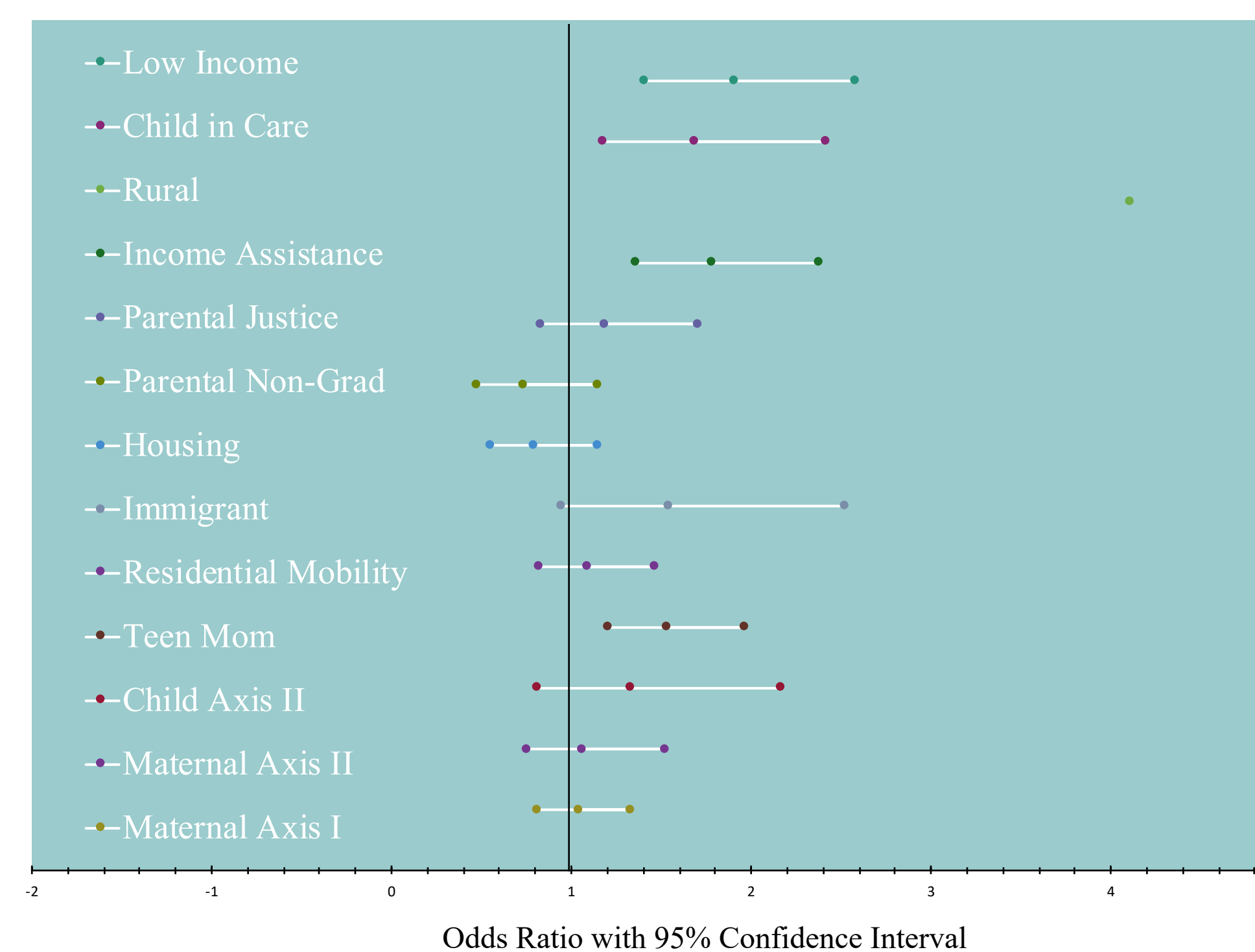
Consistent with published literature:

- Age
- Sex
- Mechanism

Conditional Multivariable Logistic Regression Analysis- OR 95% (C.I.)

Variable	OR (95% C.I.)	P value
Low Income	1.90 (1.40, 2.58)	<0.0001
Child in Care	1.68 (1.17, 2.41)	0.005
Rural	4.11 (0.87, 19.46)	0.07
Income Assist	1.78 (1.35, 2.37)	<0.0001
Parental Justice	1.18 (0.83, 1.70)	0.36
Parental Non-Grad	0.73 (0.47, 1.14)	0.16
Housing	0.79 (0.55, 1.14)	0.21
Immigrant	1.54 (0.94, 2.52)	0.09
Residential Mobility	1.09 (0.82, 1.46)	0.55
Teen Mom	1.53 (1.20, 1.96)	0.0006
Child Axis II	2.16 (0.81, 1.33)	0.12
Maternal Axis II	1.06 (0.75, 1.52)	0.73
Maternal Axis I	1.04 (0.81, 1.33)	0.78

Conditional Multivariable Logistic Regression; Odds Ratios For All Variables- Forest Plot



LIMITATIONS

- Dependent on healthcare seeking by patient
- Preferential admission
- Limited ICD codes per outpatient visit
- Probability of being a newcomer

STRENGTHS

- Large sample size and matching
- Unique ability to link datasets
- Selection bias minimized

KNOWLEDGE TRANSLATION

- Identification of particularly high-risk children for burn injury is critical to establish targeted burn prevention programs.
- It is estimated 30% of burns could be avoided if prevention programs lowered injury rates in the poorest areas²
- A multidisciplinary approach is recommended to guide and implement burn prevention and care.
- Australian burn prevention budget as precedent for Canada³
- Haddon's Matrix with passive and active prevention mechanisms has been shown to be effective in burn prevention⁴

	Human	Physical Environment	Socio-economic Environment
Pre-burn	Burn prevention behaviours	Anti-scald mixing valves, inspection	Education foster parents/teen moms
Burn	Appropriate response	Accessible resources	Uniform government policy
Post-burn	First aid and CPR	Rehabilitation, school re-integration	Burn treatment in lower income areas

CONCLUSION

- Increased burn risk with low income, children in care, income assistance, teen mother

METHODS



- A published systematic review conducted by our group guided investigation of SDoH
- Children ≤ 16 years old admitted for a burn injury
- Matched 1:5 to children with no history of hospitalization based on:
 - Age
 - Sex
 - Geographic location
- 483 cases : 2415 controls
- Personal Health Information Number (PHIN) scrambled to keep data de-identified
 - Matched with de-identified administrative health data stored at the Manitoba Centre for Health Policy (MCHP)
- ICD codes used for mental health diagnosis
- SAS statistical analysis
 - Significant differences : p < 0.05
- Correlation Matrix was created to assess degree of similarity between variables
- Univariate and multivariable logistic regression model
- Final model with only SDoH with OR >1

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