



The Impact of Maternal Socio-Economic Status on Outcome In Asphyxiated Newborns Treated With Hypothermia



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BACKGROUND

- **Birth asphyxia** is a prevalent condition experienced by newborns who did not receive sufficient blood and/or oxygen to their brain and other organs around the time of birth.
- **Therapeutic hypothermia** refers to whole body cooling at 33.5°C initiated shortly after birth and continued for 72 hours. It is currently the only proven neuroprotective treatment in these newborns.
- However, many asphyxiated newborns die or develop brain injury and long-term neurodevelopmental sequelae, despite receiving hypothermia treatment.
- **Maternal socioeconomic status (SES)** has been previously linked to disparities in fetal and neonatal health outcomes around the world. However, its potential impact on outcome in the context of birth asphyxia has never been investigated.

OBJECTIVE

- **To determine if maternal SES was associated with different neonatal outcomes in a cohort of asphyxiated newborns treated with hypothermia.**

DESIGN/METHODS

- Retrospective cohort study of term asphyxiated newborns treated with hypothermia between 2008 to 2016 .
- Neighborhood income and education were chosen as surrogates for SES and were determined using the postal codes of the parents, which were subsequently linked to census data.
- Newborns were grouped into quintiles, from most to least affluent (Q1 to Q5) for income and most to least educated (Q1 to Q5) for education.
- Income and education levels were then correlated with outcome such as birth weight, gestational age, pH on first gas, neonatal outcome, and/or presence and severity of brain injury.

RESULTS

Figure 1: Flow chart of the newborns included in the study

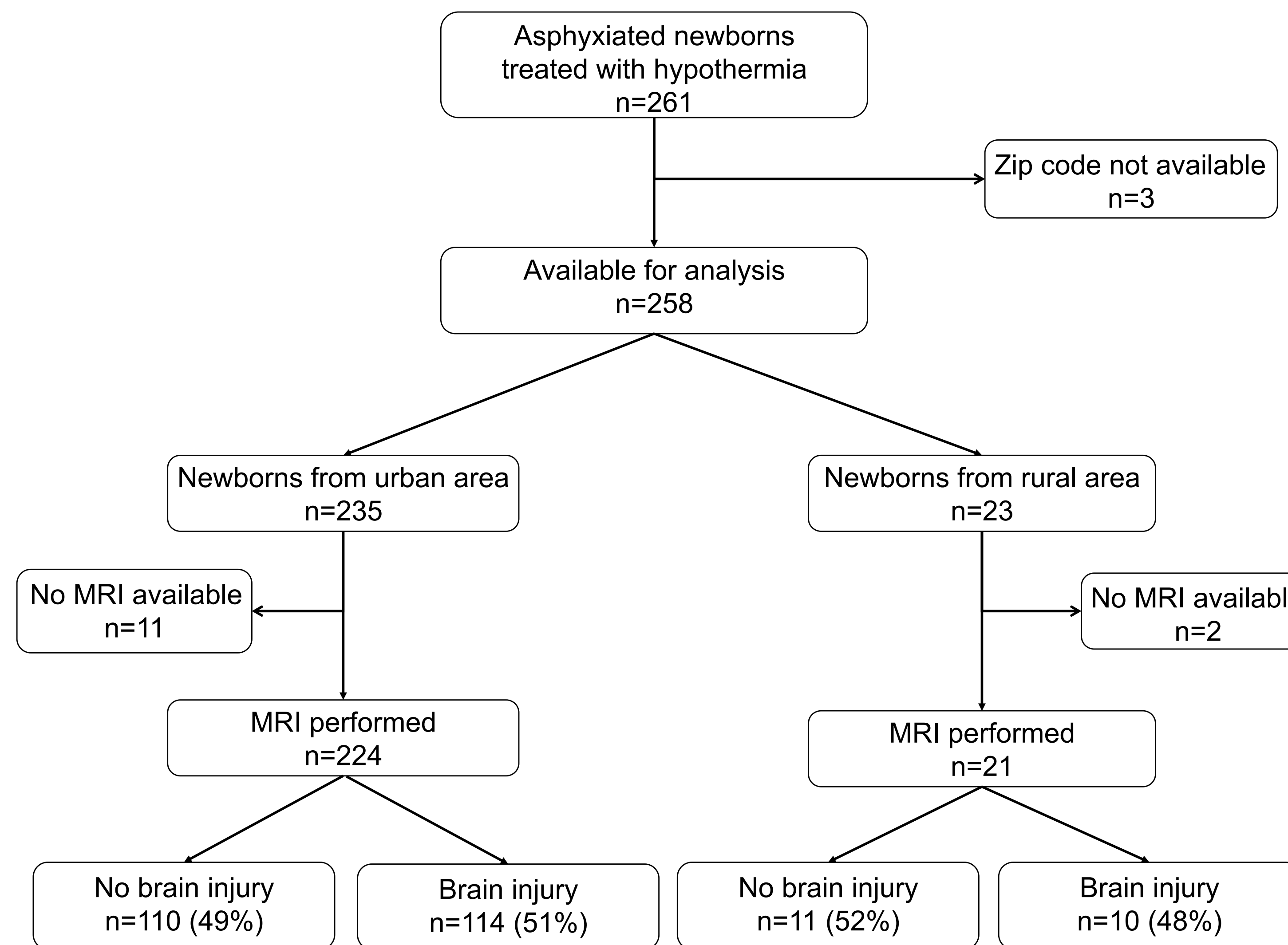


Table 1: Relationship between income and education levels and outcome

Parameters	p value for Income	p value for Education
Gestational age (weeks)	0.98	0.04 *
Birth weight (grams)	0.42	0.54
pH on first gas	0.34	0.59
Neonatal outcome (alive/dead)	0.64	0.15
Brain injury (yes/no)	0.84	0.92
Brain injury severity	0.77	0.24

- 258 newborns were included in the study.
- SES, represented by neighborhood income, did not have an impact on birth weight, gestational age, pH on first gas, neonatal outcome, and/or presence and severity of brain injury.
- SES, represented by level of education, had an impact on gestational age ($p = 0.04$), but not on birth weight, pH on first gas, neonatal outcome, and/or presence and severity of brain injury.

CONCLUSIONS

- **Maternal SES (represented per income and education) did not appear to have any impact on the outcome of asphyxiated newborns treated with hypothermia, except the level of education influencing the gestational age.**
- Further analysis is planned to determine if education and income have an impact on severity of disease in the neonatal intensive care unit.

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Figure 2: The impact of education on the incidence of brain injury

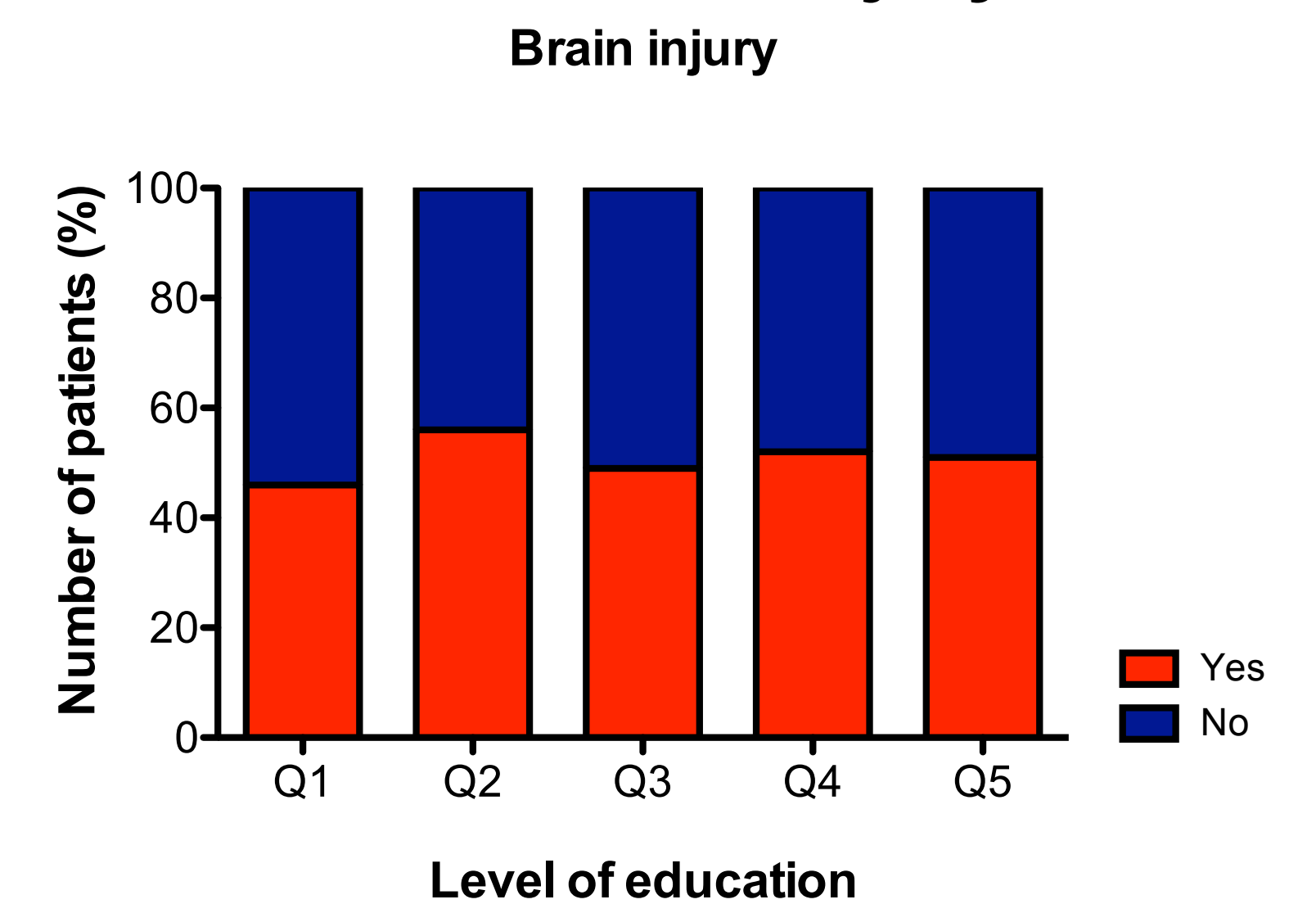


Figure 3: The impact of income on the incidence of brain injury

