

Traumatic brain injury outcomes across human development index strata in 29 countries

In the format provided by the
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STROBE Statement—Checklist of items that should be included in reports of *cohort studies*.

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	1, 2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3 ¶3
Methods			
Study design	4	Present key elements of study design early in the paper	22 ¶1,2
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	22 ¶1,2
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up (b) For matched studies, give matching criteria and number of exposed and unexposed	23 ¶1,2
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	23 ¶3
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	23 ¶3
Bias	9	Describe any efforts to address potential sources of bias	5 ¶2
Study size	10	Explain how the study size was arrived at	22 ¶1, 23 ¶1,2
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	23 ¶3
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, explain how loss to follow-up was addressed (e) Describe any sensitivity analyses	25-27
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	3 ¶4, Extended Display Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) Summarise follow-up time (eg, average and total amount)	3-5, Table 1, Figure 1
Outcome data	15*	Report numbers of outcome events or summary measures over time	5-6 Table 2, Figures 2-3
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	3 ¶4, Table 2, Figure 4
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	26 ¶5, Extended Display Figure 9
Discussion			
Key results	18	Summarise key results with reference to study objectives	6-8
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	8-9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	8-9
Generalisability	21	Discuss the generalisability (external validity) of the study results	8-9
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	9 ¶3

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at <http://www.strobe-statement.org>.

Supplementary Tables

Supplementary Table 1. Countries participating in the GNS-I study, and their respective HDI value, tier, World Bank region, Gini index, number of participating hospitals and number of patients enrolled.

Country	HDI Value	HDI Tier	World Bank Region	Gini Index	Participating Hospitals	Patients Enrolled
Algeria	0.745	<u>High Human Development</u>	<i>Middle East & North Africa</i>	27.6	2	10
Canada	0.936	<u>Very High Human Development</u>	<i>North America</i>	31.7	1	20
Egypt	0.731	<u>High Human Development</u>	<i>Middle East & North Africa</i>	31.9	16	592
France	0.903	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	31.5	1	16
Germany	0.942	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	31.7	2	44
India	0.633	<u>Medium Human Development</u>	<i>South Asia</i>	32.8	6	114
Indonesia	0.705	<u>High Human Development</u>	<i>East Asia & Pacific</i>	38.3	1	14
Iran	0.774	<u>High Human Development</u>	<i>Middle East & North Africa</i>	34.8	1	36
Iraq	0.686	<u>Medium Human Development</u>	<i>Middle East & North Africa</i>	29.5	3	43
Italy	0.895	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	34.8	7	76
Jordan	0.72	<u>High Human Development</u>	<i>Middle East & North Africa</i>	33.7	3	42
Lebanon	0.706	<u>High Human Development</u>	<i>Middle East & North Africa</i>	31.8	3	4
Libya	0.718	<u>High Human Development</u>	<i>Middle East & North Africa</i>	–	8	160
Lithuania	0.875	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	36.7	1	14
Malaysia	0.803	<u>Very High Human Development</u>	<i>East Asia & Pacific</i>	40.7	2	48
Morocco	0.683	<u>Medium Human Development</u>	<i>Middle East & North Africa</i>	39.5	2	40
Nigeria	0.535	<u>Low Human Development</u>	<i>Sub-Saharan Africa</i>	35.1	7	115
Pakistan	0.544	<u>Low Human Development</u>	<i>South Asia</i>	29.6	3	98
Palestine	0.715	<u>High Human Development</u>	<i>Middle East & North Africa</i>	33.7	3	36
Poland	0.876	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	28.5	1	1
Saudi Arabia	0.875	<u>Very High Human Development</u>	<i>Middle East & North Africa</i>	–	1	3
Somalia	–	<i>No HDI Tier Assigned for 2021-2022</i>	<i>Sub-Saharan Africa</i>	–	1	20
Spain	0.905	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	33.9	3	104
Sudan	0.508	<u>Low Human Development</u>	<i>Sub-Saharan Africa</i>	34.2	6	125
Syria	0.577	<u>Medium Human Development</u>	<i>Middle East & North Africa</i>	26.6	4	148
Tunisia	0.731	<u>High Human Development</u>	<i>Middle East & North Africa</i>	33.7	2	52
UK	0.929	<u>Very High Human Development</u>	<i>Europe & Central Asia</i>	32.4	3	31
USA	0.921	<u>Very High Human Development</u>	<i>North America</i>	39.8	5	148
Yemen	0.455	<u>Low Human Development</u>	<i>Middle East & North Africa</i>	36.7	2	11
Total					100	2,165

Supplementary Table 2. Median Odds Ratio (MOR) calculated using the original methodology as posited by Merlo, and separately calculated with 95% confidence intervals calculated from 1000 bootstrap replicates. The MOR can be interpreted as the ratio of odds of mortality between a high-mortality and a low-mortality country or hospital. A MOR equal to 1 indicates no variation, whereas an MOR diverging from 1 indicates substantial differences.

Outcome	Random Effect	Median Odds Ratio (95% CI)
Lasting Medical Complications	<u>Country</u>	1.30 (1.20 – 1.41)
	<u>Hospital</u>	2.82 (2.42 – 3.26)
Mortality at Discharge	<u>Country</u>	1.48 (1.32 – 1.67)
	<u>Hospital</u>	1.32 (1.26 – 1.38)
Mortality at 90 days Post-Injury	<u>Country</u>	1.69 (1.45 – 1.98)
	<u>Hospital</u>	1.52 (1.43 – 1.63)

Supplementary Table 3. Estimated marginal means for prevalence of outcomes for each of the previously specified models for mortality at hospital discharge, mortality at 90 days, and lasting medical complications.

Outcome	HDI Tier	Prevalence (95% CI)	p-value
Mortality at Discharge	<u>Low Human Development</u>	3.63 (0.96 – 12.77) %	<0.001
	<u>Medium Human Development</u>	6.30 (2.34 – 15.86) %	<0.001
	<u>High Human Development</u>	10.92 (5.19 – 21.54) %	<0.001
	<u>Very High Human Development</u>	3.77 (1.30 – 10.44) %	<0.001
Mortality at 90 days	<u>Low Human Development</u>	3.21 (0.66 – 14.14) %	<0.001
	<u>Medium Human Development</u>	5.95 (1.91 – 17.06) %	<0.001
	<u>High Human Development</u>	16.10 (7.08 – 32.59) %	<0.001
	<u>Very High Human Development</u>	4.15 (1.25 – 12.88) %	<0.001
Lasting Medical Complications	<u>Low Human Development</u>	25.43 (9.12 – 53.70) %	0.085
	<u>Medium Human Development</u>	19.06 (6.10 – 46.05) %	0.028
	<u>High Human Development</u>	19.33 (6.34 – 45.90) %	0.027
	<u>Very High Human Development</u>	16.57 (5.80 – 39.03) %	0.007

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