**Supplemental Digital Contents (SDC)**

SDC 1: The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement.

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| --- | --- | --- | --- |
|  | Item No | Recommendation | Page number |
| Title and abstract | 1 | (a) Indicate the study’s design with a commonly used term in the title or the abstract | Abstract |
| (b) Provide in the abstract an informative and balanced summary of what was done and what was found | Abstract |
| Introduction |  |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | P. 1 |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses | P. 1-2 |
| Methods |  |
| Study design | 4 | Present key elements of study design early in the paper | P. 1 |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | P. 2 |
| Participants | 6 | (a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up | P. 2 |
| (b) For matched studies, give matching criteria and number of exposed and unexposed | N/A |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | P.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 | P. 3 |
| Bias | 9 | Describe any efforts to address potential sources of bias | P. 9 |
| Study size | 10 | Explain how the study size was arrived at | P.2 |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | P.2-3 |
| Statistical methods | 12 | (a) Describe all statistical methods, including those used to control for confounding | P. 3-4 |
| (b) Describe any methods used to examine subgroups and interactions | P. 3-4 |
| (c) Explain how missing data were addressed | P. 3 |
| (d) If applicable, explain how loss to follow-up was addressed | N/A |
| (e) Describe any sensitivity analyses | P. 6 |
| 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 | P. 5 |
| (b) Give reasons for non-participation at each stage | P. 2 |
| (c) Consider use of a flow diagram | Figure 1 |
| Descriptive data | 14\* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders | Table 1 |
| (b) Indicate number of participants with missing data for each variable of interest | Figure 1 |
| (c) Summarise follow-up time (eg, average and total amount) | Table 1 |
| Outcome data | 15\* | Report numbers of outcome events or summary measures over time | Table 1 |
| 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 | Table 3, 4 |
| (b) Report category boundaries when continuous variables were categorized | Table 3, 4 |
| (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | Table 3, 4 |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses | SDC 4, 5 |
| Discussion |  |
| Key results | 18 | Summarise key results with reference to study objectives | P. 6 |
| 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 | P. 9 |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | P. 7-8 |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | P. 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 | Title page |

SDC 2: Histograms of (A) mean annual geriatric case volume and (B) rate of geriatric trauma patients.



SDC 3: Association of geriatric case volume and geriatric case rate with outcomes among geriatric trauma patients using generalized linear mixed model (medium geriatric case volume and geriatric case rate groups were treated as reference).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | In-hospital mortality |  | Adverse events |  | Prolonged LOS |  |
| GCV | OR (95% CI) | p-value | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Low | 1.12 (0.99–1.28) | 0.07 | 1.18 (1.05–1.30) | 0.004 | 1.26 (1.14–1.41) | <0.001 |
| Medium | 1.00 (reference) |  | 1.00 (reference) |  | 1.00 (reference) |  |
| High | 0.87 (0.83–0.91) | <0.001 | 0.89 (0.85–0.92) | <0.001 | 0.88 (0.84–0.92) | <0.001 |
| GCR | OR (95% CI) | p-value | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Low | 1.16 (1.08–1.26) | <0.001 | 1.19 (1.11–1.26) | <0.001 | 1.31 (1.25–1.36) | <0.001 |
| Medium | 1.00 (reference) |  | 1.00 (reference) |  | 1.00 (reference) |  |
| High | 0.98 (0.91–1.05) | 0.279 | 0.94 (0.89–1.01) | 0.059 | 0.95 (0.87–1.05) | 0.382 |

Data are presented as odds ratio (95% confedence interval).

The model was adjusted for age, sex, injury mechanism (penetrating or blunt), Revised Trauma Score (RTS), ISS, modified Frailty Index, hospital characteristics (ACS verification level and teaching status).

Abbreviations: OR odds ratio, CI confedence interval, LOS length of stay, GCV geriatric case volume, GCR geriatric case rate.

SDC 4: Cox proportional hazard regression analysis of 28-day mortality among high-geriatric case volume/rate subgroups.

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| --- | --- | --- | --- |
| Geriatric case volume (GCV) | n | HR (95% CI) | p-value |
| Among high-GCR | low | 2,678 | 1.00 (reference) |  |
| medium | 9,248 | 0.94 (0.76–1.15) | 0.532 |
| high | 13,272 | 0.76 (0.62–0.93) | <0.001 |
| Geriatric case rate (GCR) | n | HR (95% CI) | p-value |
| Among high-GCV | low | 51,951 | 1.00 (reference) |  |
| medium | 53,940 | 0.92 (0.88–0.95) | <0.001 |
| high | 13,272 | 0.78 (0.73–0.84) | <0.001 |

Data are presented as hazard ratio (95% confedence interval).

The model was adjusted for age, sex, injury mechanism (penetrating or blunt), Revised Trauma Score (RTS), ISS, modified Frailty Index, hospital characteristics (ACS verification level and teaching status).

Abbreviations: HR hazard ratio, CI confedence interval.

SDC 5: Association of geriatric case volume and geriatric case rate with in-hospital mortality and adverse events among subgroups with less severe injury (Injury Severity Score <16) using generalized linear mixed model.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | In-hospital mortality |  | Adverse events |  | Prolonged LOS |  |
| GCV | OR (95% CI) | p-value | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Low | 1.00 (reference) |  | 1.00 (reference) |  | 1.00 (reference) |  |
| Medium | 0.90 (0.83–0.99) | 0.024 | 0.85 (0.77–0.95) | 0.004 | 0.84 (0.77–0.93) | <0.001 |
| High | 0.82 (0.72–0.92) | <0.001 | 0.79 (0.71–0.88) | <0.001 | 0.68 (0.63–0.75) | <0.001 |
| GCR | OR (95% CI) | p-value | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Low | 1.00 (reference) |  | 1.00 (reference) |  | 1.00 (reference) |  |
| Medium | 0.86 (0.79–0.92) | <0.001 | 0.84 (0.79–0.90) | <0.001 | 0.62 (0.59–0.65) | <0.001 |
| High | 0.81 (0.73–0.90) | <0.001 | 0.75 (0.68–0.82) | <0.001 | 0.55 (0.51–0.59) | <0.001 |

Data are presented as odds ratio (95% confedence interval).

The model was adjusted for age, sex, injury mechanism (penetrating or blunt), Revised Trauma Score (RTS), ISS, modified Frailty Index, hospital characteristics (ACS verification level and teaching status).

Abbreviations: OR odds ratio, CI confedence interval, LOS length of stay, GCV geriatric case volume, GCR geriatric case rate.

SDC 6: Association between teaching status/trauma center levels and in-hospital mortality in geriatric trauma patients using generalized linear mixed model.

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| --- | --- | --- |
|  | In-hospital mortality |  |
| Teaching status | OR (95% CI) | p-value |
| Teaching | 1.00 (reference) |  |
| Non-teaching | 0.98 (0.94-1.03) | 0.660 |
| Trauma center level | OR (95% CI) | p-value |
| Level 1 | 1.00 (reference) |  |
| Level 2 | 1.01 (0.97-1.05) | 0.523 |
| Level 3/non-TC | 0.91 (0.81-1.02) | 0.105 |

Data are presented as odds ratio (95% confedence interval).

The model was adjusted for age, sex, injury mechanism (penetrating or blunt), Revised Trauma Score (RTS), ISS, modified Frailty Index.

Abbreviations: OR odds ratio, CI confedence interval, TC trauma center.