The STROBE reporting checklist

For checking that observational epidemiology research articles can be understood and used by everyone

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| Note |
| If you have not used a reporting guideline before, read about [how and why to use them](https:/jamesrharwood.github.io/equator-guidelines-website/about/reporting-guidelines.html) and check whether STROBE is the [most applicable reporting guideline](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/index.html?#applicability) for your work.  When writing, consider using the STROBE [Writing Guide](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/strobe-writing-guide.docx) or [Full Guidance](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/index.html).  After writing, demonstrate adherence by completing this checklist:   1. Specify where each item is described (see [Note 1](#sec-specify)). 2. Cite this checklist (See [Note 2](#sec-cite)). 3. Include your completed checklist as a supplement when submitting to a journal. |

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|  | Item Description | Location (or reason for not reporting) |
| **Title and abstract** |  |  |
| [1a. Indicate the study’s design](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/title-abstract-indicate-study-design.html) | Indicate the study’s design with a commonly used term in the title or the abstract. |  |
| [1b. Abstract](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/abstract.html) | Provide in the abstract an informative and balanced summary of what was done and what was found. |  |
| **Introduction** |  |  |
| [2. Background / rationale](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/background-rationale.html) | Explain the scientific background and rationale for the investigation being reported. |  |
| [3. Objectives](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/objectives.html) | State specific objectives, including any prespecified hypotheses. |  |
| **Methods** |  |  |
| [4. Study design](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/study-design.html) | Present key elements of study design early in the paper. |  |
| [5. Setting](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/setting.html) | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection. |  |
| [6a. Eligibility criteria](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/eligibility-criteria.html) | **Cohort study:** Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up. **Case-control study:** Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls. **Cross-sectional study:** Give the eligibility criteria, and the sources and methods of selection of participants. |  |
| [6b. Matching criteria](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/matching-criteria.html) | **Cohort study:** For matched studies, give matching criteria and number of exposed and unexposed. **Case-control study:** For matched studies, give matching criteria and the number of controls per case. |  |
| [7. Variables](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/variables.html) | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable. |  |
| [8. Data sources / measurement](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/data-sources-measurement.html) | 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. |  |
| [9. Bias](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/bias.html) | Describe any efforts to address potential sources of bias. |  |
| [10. Study size](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/study-size.html) | Explain how the study size was arrived at. |  |
| [11. Quantitative variables](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/quantitative-variables.html) | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why. |  |
| [12a. Statistical methods](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-description.html) | Describe all statistical methods, including those used to control for confounding. |  |
| [12b. Statistical methods – subgroups and interactions](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-subgroups-interactions.html) | Describe any methods used to examine subgroups and interactions. |  |
| [12c. Statistical methods – missing data](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-missing-data.html) | Explain how missing data were addressed. |  |
| [12di. Statistical methods – loss to follow-up](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-loss-to-follow-up.html) | **Cohort study:** If applicable, describe how loss to follow-up was addressed. |  |
| [12dii. Statistical methods – matching cases and controls](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-matching-cases-controls.html) | **Case-control study:** If applicable, explain how matching of cases and controls was addressed. |  |
| [12diii. Statistical methods – sampling strategy](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-analytical-methods-sampling-strategy.html) | **Cross-sectional study:** If applicable, describe analytical methods taking account of sampling strategy. |  |
| [12e. Statistical methods – sensitivity analyses](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/statistical-methods-sensitivity-analyses.html) | Describe any sensitivity analyses. |  |
| **Results** |  |  |
| [13a. Participant numbers](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/participants-numbers.html) | Report the numbers of individuals at each stage of the study—e.g., numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed; Consider use of a flow diagram. |  |
| [13b. Participants – non-participation](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/participants-non-participation.html) | Give reasons for non-participation at each stage. |  |
| [13c. Participants – flow diagram](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/participants-flow-diagram.html) | Consider use of a flow diagram. |  |
| [14a. Descriptive data – participant characteristics](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/descriptive-data-participant-characteristics.html) | Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders. Present the information in a table. |  |
| [14b. Descriptive data – missing data](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/descriptive-data-missing-data.html) | Indicate the number of participants with missing data for each variable of interest. |  |
| [14c. Descriptive data – follow-up time](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/descriptive-data-follow-up-time.html) | **Cohort study:** Summarise follow-up time—e.g., average and total amount. |  |
| [15. Outcome data](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/outcome-data.html) | **Cohort study:** Report numbers of outcome events or summary measures over time. **Case-control study:** Report numbers in each exposure category, or summary measures of exposure. **Cross-sectional study:** Report numbers of outcome events or summary measures. |  |
| [16a. Main results](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/main-results.html) | Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence intervals). Make clear which confounders were adjusted for and why they were included. |  |
| [16b. Main results – category boundaries](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/main-results-category-boundaries.html) | Report category boundaries when continuous variables were categorised. |  |
| [16c. Main results – risk](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/main-results-risk.html) | If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period. |  |
| [17. Other analyses](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/other-analyses.html) | Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses. |  |
| **Discussion** |  |  |
| [18. Key results](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/key-results.html) | Summarise key results with reference to study objectives. |  |
| [19. Limitations](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/limitations.html) | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias. |  |
| [20. Interpretation](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/interpretation.html) | Give a cautious overall interpretation considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence. |  |
| [21. Generalisability](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/generalisability.html) | Discuss the generalisability (external validity) of the study results. |  |
| **Other information** |  |  |
| [22. Funding](https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/items/funding.html) | 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. |  |

## 1 How to specify where content is

Tell the reader where they can find information. E.g.,

* Results; paragraph 2
* Methods, Participants; paragraphs 1 & 2.
* Table 3
* Supplement B, para. 4

If you have chosen not to describe an item, explain why.

You can describe items in the article body, or in tables, figures, or supplementary materials, and should prioritize items you feel are most important to your intended audience. The order of items in your manuscript does not need to match the order of items in this checklist. You can decide how best to structure your work.

## 2 How to cite

Describe how you used STROBE at the end of your Methods section, referencing the resources you used e.g.,

‘We used the STROBE(1) writing guide to draft this manuscript, and the STROBE reporting checklist(2) when editing, included in supplement A’

If you use a reporting checklist, remember to include it as a supplement when publishing so that readers can easily find information and see how you have interpreted the guidance.

1. AUTHOR. The STROBE writing guide. In: #TODO, editor. The EQUATOR network reporting guideline platform [Internet]. The UK EQUATOR Centre; 2025. Available from: [https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/strobe-writing-guide.docx](https://https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/strobe-writing-guide.docx)

2. AUTHOR. The STROBE reporting checklist. In: #TODO, editor. The EQUATOR network reporting guideline platform [Internet]. The UK EQUATOR Centre; 2025. Available from: [https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/strobe-checklist.docx](https://https:/jamesrharwood.github.io/equator-guidelines-website/guidelines/strobe/strobe-checklist.docx)