european burden-eu of disease network

STROBOD-CRA

Extending the STROBOD statement to Comparative Risk Assessment

Vanessa Gorasso and Dietrich Plass

Berlin, 17 September 2026

Standardised Reporting of Burden of Disease Studies (STROBOD)

https://www.burden-eu.net/outputs/strobod

Devleesschauwer *et al.*
Population Health Metrics (2024) 22:28
https://doi.org/10.1186/s12963-024-00347-9

Population Health Metrics

COMMENT Open Access

Standardised reporting of burden of disease studies: the STROBOD statement

Brecht Devleesschauwer[1,2*], Periklis Charalampous[3], Vanessa Gorasso[1], Ricardo Assunção[4], Henk Hilderink[5], Jane Idavain[6], Tina Lesnik[7], Milena Santric-Milicevic[8,9], Elena Pallari[10], Sara M. Pires[11], Dietrich Plass[12], Grant M. A. Wyper[13,14], Elena Von der Lippe[15] and Juanita A. Haagsma[3]

Abstract

Background The burden of disease (BOD) approach, originating with the Global Burden of Disease (GBD) study in the 1990s, has become a cornerstone for population health monitoring. Despite the widespread use of the Disability-Adjusted Life Year (DALY) metric, variations in methodological approaches and reporting inconsistencies hinder comparability across studies. To tackle this issue, we set out to develop guidelines for reporting DALY calculation studies to improve the transparency and comparability of BOD estimates.

Methods and Findings The development of the STROBOD statement began within the European Burden of Disease Network, evolving from initial concepts discussed in workshops and training sessions focused on critical analysis of BOD studies. In 2021, a working group was formed to refine the preliminary version into the final *Standardised Reporting of Burden of Disease studies* (STROBOD) statement, consisting of 28 items structured across six main sections. These sections cover the title, abstract, introduction, methods, results, discussion, and open science, aiming to ensure transparency and standardization in reporting BOD studies. Notably, the methods section of the STROBOD checklist encompasses aspects such as study setting, data inputs and adjustments, DALY calculation methods, uncertainty analyses, and recommendations for reproducibility and transparency. A pilot phase was conducted to test the efficacy of the STROBOD statement, highlighting the importance of providing clear explanations and examples for each reporting item.

Conclusions The inaugural STROBOD statement offers a crucial framework for standardizing reporting in BOD research, with plans for ongoing evaluation and potential revisions based on user feedback. While the current version focuses on general BOD methodology, future iterations may include specialized checklists for distinct applications such as injury or risk factor estimation, reflecting the dynamic nature of this field.

Keywords Burden of disease, Disability-adjusted life years, European burden of disease network, Checklist, Reporting guidelines

STROBOD 2024 Checklist – www.burden-eu.net/strobod

Item number	Domains and description of the recommended items	Reported on page number
TITLE		
1	Identify the study as a burden of disease assessment by including keywords (e.g., Years of Life Lost, Years Lost due to Disability, Disability-Adjusted Life Years, burden of disease etc), and describe the study setting.	
ABSTRACT		
2	Provide a summary of objectives, study setting, methods (including data sources and key methodological design choices used), results (including point estimates and, if applicable, uncertainty intervals), and conclusions.	
INTRODUCTION		
3	Present background information to the study, its study aim(s), and its relevance for health policy or practice.	
METHODS		
Study setting		
4	Report for which cause(s) the burden was calculated. Provide a case definition, e.g., in terms of an internationally recognized classification system such as the International Classification of Diseases and Related Health Problems 10th Revision.	
5	Report the reference population and any stratification of the reference population for the burden of disease assessment, i.e., the population for which the burden was calculated. This may include the geographical location (e.g., country or province/state), and whether the general population or a specific subset of the population (e.g., females, adolescents aged 10-19 years, etc) was considered.	
6	Report the reference time period (e.g., year(s), month(s)) of the study. This refers to the time period to which the burden of disease estimates refer.	
Epidemiological and demographic input data		
7	Report the sources, values, ranges, and, if used, probability distributions for all epidemiological input parameters. Report reasons or sources for distributions used to represent uncertainty where appropriate. Providing a (supplementary) table to show all epidemiological input parameters and respective sources and assumptions is strongly recommended.	
8	Describe all possible data manipulations, such as bias corrections, data integration steps, or methods to ensure internal consistency of the data inputs.	

STROBOD-CRA

NEW

Item number	Domains and description of the recommended items	Reported on page number
TITLE		
1	Identify the study as a burden of disease assessment by including keywords (e.g., Years of Life Lost, Years Lost due to Disability, Disability-Adjusted Life Years, burden of disease etc), and describe the study setting.	
1a	For Comparative Risk Assessment studies, use keywords like Comparative Risk Assessment, Population Attributable Fraction, Attributable burden, risk factors.	
ABSTRACT		
2	Provide a summary of objectives, study setting, methods (including data sources and key methodological design choices used), results (including point estimates and, if applicable, uncertainty intervals), and conclusions.	
INTRODUCTION		
3	Present background information to the study, its study aim(s), and its relevance for health policy or practice.	
METHODS		
For Comparative Risk Assessment studies, skip to item n. 20 if you did not estimate the burden of disease within the scope of this study.		
Comparative risk assessment methods		
Definition of the risk factor		
20	Report a clear definition of the risk factor considered (e.g., for air pollution: NO2, PM2.5) and of the exposure to that risk factor (e.g., exposure via active smoking, via ambient air pollution). State how exposure was assessed (e.g. measured, modelled).	
21	Report whether the risk factor exposure was expressed as a categorical, dichotomous, or continuous variable.	
Data sources of the exposure		
22	Report the data source(s) used for the exposure assessment of the risk factor (e.g., surveys, literature, registries).	
Risk-outcome pairs and exposure-response functions		
23	Report the diseases or health outcomes considered as associated with the risk factor(s).	
24	Report the exposure-response function used to describe the relationship between the risk factor(s) and the disease outcome(s), including the metric used to summarize it (e.g., relative risk, odds ratio, hazard ratio).	
25	Report the shape of the exposure-response relationship (e.g., linear, exponential, non-linear).	

Thought as **an add-on** to the current checklist

- Possibility to report BOD methods, if applicable

When you read and/or review papers using "comparative risk assessment" methods, which information do you often miss?

- Please respond to the mentimeter question:

Menti-Code: **9525 6336**

STROBOD-CRA: methods

Definition of the risk factor	
20	Report a clear definition of the **risk factor considered** (e.g., for air pollution: NO2, PM2.5) and of the **exposure to that risk factor** (e.g., exposure via active smoking, via ambient air pollution). State how **exposure was assessed** (e.g. measured, modelled).
21	Report whether the risk factor exposure was expressed as a **categorical, dichotomous, or continuous variable.**
Data sources of the exposure	
22	Report the **data source(s) used for the exposure** assessment of the risk factor (e.g., surveys, literature, registries).

- Is it complete?
- Well described?
- Clear?

STROBOD-CRA: methods

Risk-outcome pairs and exposure-response functions	
23	Report the **diseases or health outcomes** considered **associated** with the risk factor(s).
24	Report the exposure-response function used to **describe the relationship** between the risk factor(s) and the disease outcome(s), **including the metric used** to summarize it (e.g., relative risk, odds ratio, hazard ratio).
25	Report the **shape of the exposure-response relationship** (e.g., linear, exponential, non-linear).
26	Report the **data source(s) used for the exposure-response function** (e.g., a single study, multiple studies, meta-analysis, literature review), or, if the function was **derived within the study itself**, describe the methods used to compute it.
Causality	
27	Report whether **the causal relationship** between the risk factor and the outcome(s) was **explored**, and whether this was **addressed** as part of the methods (e.g., a formal assessment of causality) or only **discussed** narratively.

- Is it complete?
- Well described?
- Clear?

STROBOD-CRA: methods

Definition of theoretical minimum risk exposure level	
28	Report the **counterfactual exposure level** (e.g. theoretical minimum risk exposure level) used in the comparative risk assessment and **justify its choice**, e.g., the absolute absence of exposure, an alternative reduced level, or an exposure level corresponding to a specific health intervention.
Computation of attributable burden	
29	Report whether your study uses a **top-down or bottom-up approach**.
30	Report the **method used to compute the burden of disease attributable** to the risk factor, e.g., application of a population attributable fraction to the total DALYs/YLDs/YLLs, or an alternative ad-hoc method, and describe how it was calculated.
31	Report the **sources of the burden of disease estimates** (the total DALYs/YLDs/YLLs).
32	Report whether the comparative risk assessment was **stratified** e.g. age, sex, other.

- Is it complete?
- Well described?
- Clear?

STROBOD-CRA: results

Reporting results	
35a	Report the point estimates and, if applicable, the uncertainty interval of Population Attributable Fractions and Attributable burden estimates. Provide both absolute values, crude rates (optional), and age-standardized rates per 100,000 in a table or figure, when applicable.

- Is it complete?
- Well described?
- Clear?

Next steps

- Looking for volunteers to test the new checklist on their Comparative Risk Assessment studies