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Review of Guidelines for Rigour in the Design, Conduct, and Analysis of Biomedical Experiments Involving Animals

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Introduction

In recent years, there has been an increasing awareness of the harmful consequences of unstandardized preclinical and biomedical research planning, conduct, and reporting [1]. Several initiatives, such as Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies (CAMARADES), National Centre for the 3Rs (NC3Rs), Systematic Review Centre for Laboratory Animal Experimentation (SYRCLE), and the Enhancing the Quality and Transparency of Health Research (EQUATOR) network, have set the goal of increasing validity and reliability in reporting of (not only preclinical) studies and publications. Similar associations have arisen among publishers for example, The Lancet's Reduce Research Waste and Reward Diligence (REWARD) projects.

The goal of this systematic review is to identify and harmonize current preclinical animal research experimental design, conduct, and analytic protocols. The review will also look for literature that describes bias hazards in preclinical biomedical research design, conduct, and analysis either through primary research or systematic review. Reporting standards will be taken into account if they refer to themes that should be examined at the planning or experimental stages, not just at the reporting stage. Internal validity and repeatability of experimental design, conduct, and analysis will be the emphasis of this review.

While we recognize that aspects like as animal housing and care are critical for experiment reproducibility, they will not be evaluated in this first Systematic Review (SR), which will focus on internal validity. The impact of animal care and use will be examined in a separate SR at a later date.

Inclusion and exclusion criteria

This study will include all English-language articles or systematic reviews that describe or review recommendations for the internal validity and reproducibility of preclinical animal study design, conduct, and analysis. Articles that are solely concerned with toxicity or veterinary medications will be excluded. Literature that does not focus on guidelines but describes bias hazards in preclinical biomedical research design, conduct, and analysis will also be examined. Although the major goal of this systematic review is not to find reporting standards, they will be searched, filtered, and extracted because they may contain useful information that should be evaluated not only at the reporting stage, but also at the planning or experimental stage.

Screening and annotation

Prior to screening, potential duplication or publication of similar recommendations by the same author group in other journals will be recognized using the PubMed ID, Digital Object Identifier (DOI), and title, journal, and author list after merging the search results from all sources. After that, unique references will be examined in two stages:

Screening for eligibility based on title and abstract.

Screening for definitive inclusion based on full text.

Spiritual Youth for Reproductive Freedom (SYRF) will be used to do the screening. Two independent reviewers will be assigned to each reference at random. The authors of the presented record are not hidden from reviewers. Two authors will assess the title and abstract of the retrieved records for eligibility using present inclusion criteria in the first step. Sensitivity will be the emphasis of the title and abstract screening stages.

After the title-abstract screening, articles will be subjected to a parallel full-text screening for final inclusion. We'll try to get full-text versions of all of the papers through open access, interlibrary loan, or direct contact with the authors. Articles for which there is no full-text version are not eligible for review.

References

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