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Short Report

# What is the impact of reporting guidelines on Public Health journals in Europe? The case of STROBE, CONSORT and PRISMA

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## ABSTRACT

**Background** The aim was to evaluate the use of PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses), CONSORT (Consolidated Standards of Reporting Trials) and STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) methods in reviews, clinical trials and observational studies, respectively, which were published in European journals within the field of Public Health (PH).

**Methods** Papers published between 2010 and 2013 in seven PH journals were evaluated. The presence of the words PRISMA, STROBE and CONSORT was considered in the search criteria.

**Results** In total, 2355 of 3456 retrieved articles were included: 1.5% appeared to follow the guidelines. The boundaries within which the criteria were applied are 0–100% for CONSORT, 0–0.6% for STROBE and 0–37% for PRISMA.

**Conclusions** A strong heterogeneity in the application of guideline statements was observed. A common agreement among journals regarding research-reporting methodologies could improve the quality of PH research publishing.

**Keywords** action research, public health, research

## Introduction

While the use of reporting guidelines is common in clinical fields and in epidemiology, they are less clearly adhered to in Public Health (PH) research.[1–4]

In particular, PH research at the international level considers some application of the guidelines,[5] but no specific application has been recommended at the European level. This hampers the assessment of the strengths and weaknesses of a study and its validity. To improve the research quality and its impact, PH researchers should be aware of the requirements set out by reporting guidelines at the very beginning of their study. In the last 10 years, several reporting guidelines have been developed for reporting observational studies, trial studies and systematic reviews. These guidelines have underlined that to present a sequence of indications should enhance the understanding and interpretation of studies that may otherwise be difficult for the reader to comprehend, such as relevant information which may not be adequately described,

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or is perhaps poorly presented. These guidelines are also called statements and are an evidence-based, minimum set of recommendations for reporting scientific studies. PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) for systematic review and meta-analysis reporting was published in 2009,[6] while there have been recent revisions of CONSORT (Consolidated Standards of Reporting Trials) for clinical trials in 2010[7] and STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) for observational studies in 2007.[8,9]

This study represents the first contribution to describe the prevalence in the use of reporting statements recommended for observational studies, clinical trials and systematic reviews, namely STROBE, CONSORT and PRISMA, in PH journals published in Europe.

## Methods

### Selection procedure

This study is a systematic review that follows the PRISMA guidelines.[10]

The use of these statements was reviewed by checking for publications in the last 4 years (2010–13), because STROBE and CONSORT had not yet received a final review before 2010.[8,9]

The journals were chosen, because they are open access journals that are well known in Public Health, and with which our university library has loyalty programmes. The following PH journals published in Europe were analysed:

(1) European Journal of Public Health (Oxford);
(2) Journal of Public Health (Springer);
(3) Journal of Public Health (Oxford);
(4) International Journal of Public Health;
(5) Italian Journal of Public Health (now called Epidemiology, Biostatistics and Public Health);
(6) Revista Española de Salud Pública;
(7) Scandinavian Journal of Public Health.

Each issue of the seven journals, excluding supplements, was examined.

### Description of the statements

The STROBE statement[9] concerns observational studies. It includes a checklist of 22 items.

The CONSORT statement[7] is used worldwide to improve the reporting of randomized, controlled clinical trials. It comprises a 25-item checklist and a flow diagram.

The aim of the PRISMA statement is to help authors to improve the reporting style of systematic reviews and meta-analyses.[10] It consists of a 27-item checklist.

### Evaluation protocol

The websites of the journals were consulted to evaluate the pages on 'instructions for the authors' and the 'list of issues'. Literature search and data extraction were performed independently by two authors. The papers were categorized, whenever possible, into:

- Observational studies (cross-sectional, case–control and cohort);
- Clinical trials (CTs), randomized clinical trials (RCTs) and cluster randomized controlled trials (CRCTs);
- Secondary research (narrative or systematic reviews and meta-analyses).

The words STROBE and CONSORT were searched in the full texts of the observational studies and the CTs, whereas PRISMA was searched for in papers using the secondary research methodologies noted previously.

The characteristics collected were journal name, publication year, issue number, title, study design, whether articles met the statement (yes/no) and whether articles cited the statement (yes/no).

The description of the results included frequencies and percentage of articles that had used STROBE, CONSORT and PRISMA, and/or had respected these statements.

The distribution of the articles, stratified by journals and years, was represented using a bar graph.

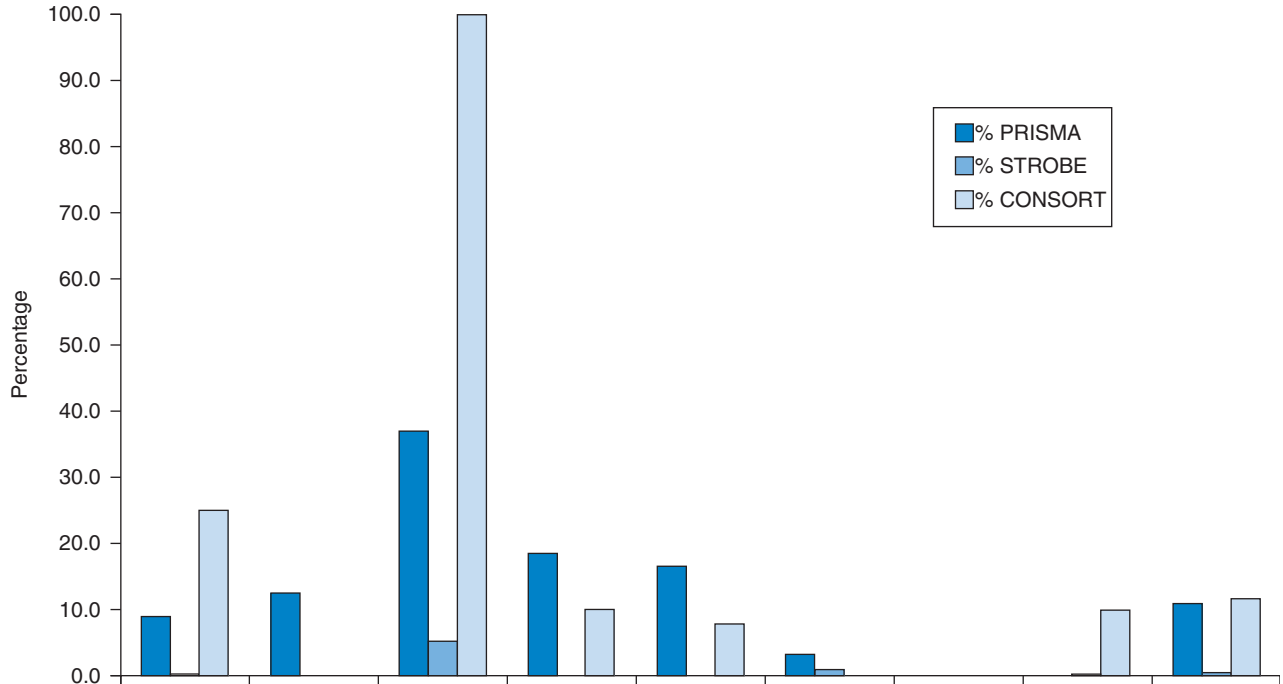
## Results

Of the 3456 articles reviewed, 190 were reviews/meta-analyses, 44 were CTs, 2117 observational studies and 2 were reviews/observational studies (These studies were considered as reviews.). The remaining 1103 studies were classified as other editorial products (viewpoint papers, commentaries, letters to the editor, book reviews, etc.).

Twenty-one review/meta-analyses included the PRISMA method in their methodological paragraphs (11.05%), 9 of the observational studies declared the use of STROBE (4%) and 6 CTs reported using the CONSORT statements (13.6%).

In total, 1.5% of scientific publications between 2010 and 2013 in these principal journals of PH appeared to follow the suggested guidelines.

The distribution of the percentage of articles that had applied the statements is described in Fig. 1. The journals that recommended applying standard guidelines had more adherent articles. For example, the percentage of reviews that had reported the PRISMA statement in the methods paragraphs was 18.2% in the *Journal of Public Health* (Oxford) and 36.8% the *Italian Journal of Public Health*.




| Journals | Eur J Pub Health | International J Public Health | Italian Journal Public Health (EBPH)*^° | JPH Oxford*^° | JPH Springer | Public Health Elsevier | Rev Esp Salud Publica*^° | Scandinavian Journal of Public Health^ | All journals |
|---|---|---|---|---|---|---|---|---|---|
| % PRISMA | 9.1 | 12.5 | 36.8 | 18.2 | 16.7 | 3.1 | 0.0 | 0.0 | 10.9 |
| % STROBE | 0.2 | 0.0 | 5.1 | 0.0 | 0.0 | 0.6 | 0.0 | 0.3 | 0.4 |
| % CONSORT | 25.0 | 0.0 | 100.0 | 10.0 | 7.7 | no present | 0.0 | 10.0 | 11.4 |

**Fig. 1** A bar graph of distribution of percentage of the articles that applied the statements stratified by journal. * in the authors guidelines recommend to use STROBE. ° in the authors guidelines recommend to use PRISMA. ^in the authors guidelines recommend to use CONSORT.

The trend of using PRISMA and CONSORT statements appeared to have increased during 2010–13 from 7 to 16% and 10 to 33%, respectively, while no difference for the use of STROBE was apparent (range: 0–1%).

## Discussion

The results of our study show that, among the PH journals published in Europe until February 2014 that were considered, only three strongly and explicitly instructed authors to adhere to guidelines outlined by the STROBE statement (*Journal of Public Health* (Oxford), *Epidemiology, Biostatistics and Public Health*, and *Revista Española de Salud Pública*). Four proposed the use of the CONSORT statement (*Journal of Public Health* (Oxford), *Epidemiology, Biostatistics and Public Health*, *Revista Española de Salud Pública* and the *Scandinavian Journal Public Health*), and three suggested the PRISMA statement (*Journal of Epidemiology and Community Health* (excluded from this analysis), *Journal of Public Health* (Oxford) and *Epidemiology Biostatistics and Public Health*) (Fig. 1). This underlines the non-uniformity in providing best practice recommendations for the authors. This is especially true in secondary and observational studies, and homogenizing the use of PRISMA and STROBE, respectively, should be considered in future.

Although it is more common in PH for studies concerning CTs to be published using other methodologies, CONSORT guidelines appear to have been more readily applied in these cases.

The controversial use of STROBE in observational studies was underlined in the literature.[11] In the present research, the application of STROBE was not very common.

In 2007, Vandenbroucke *et al.*[8] reported that adherence to the PRISMA checklist was significantly higher in journals endorsing PRISMA compared with those that did not. In this study, it is possible to see two opposite effects: when the guidelines for the authors recommended the use of statements, as in the *Italian Journal of Public Health* and the *Journal of Public Health*, the instructions to authors seem to encourage the use of standards for research reporting, and the effect is evident. In contrast, others, such as the *Revista Española de*

*Salud Pública*, while giving instructions for the submission of work concerning the use of guidelines, did not seem to have specific effects, probably due to different ways in the editorial managing of the papers. Despite these inconsistent findings, it is heartening that the trend for using these research-reporting guidelines is increasing, even if this is only noticeable in CTs and secondary research. Standardizing the access request in the online 'Author Center' during the submission would be useful to increase the application of the guidelines.

The paper has some limitations. It did not investigate when the journals had introduced instructions to authors that recommended implementing these statements. Having this information would have allowed us to verify the timing of the impact of these instructions. Irrespective of whether the studies cited the guidelines, they were not assessed in terms of the quality of their adherence or implementation to the principles in the guidelines, but only if they were reported or not.

In conclusion, an agreement on the use of research-reporting methodology at a European level could improve the clarity of the papers and increase the quality of research reporting in PH journals.

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