Guidelines for Editing Biomedical Journals: Recommended by Academy of Medical Sciences of Bosnia and Herzegovina

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ABSTRACT
Background: Enormous number of medical journals published around the globe requires standardization of editing practice. Objective: The aim of this article was to enlist main principles of editing biomedical scientific journals adopted at annual meeting of Academy of Medical Sciences of Bosnia & Herzegovina (AMSB&H). Methods: The evidence for writing this Guideline was systematically searched for during September 2020 in the PUBMED and GOOGLE SCHOLAR databases. The inclusion criteria were: original studies, systematic reviews, invited expert opinions, guidelines and editorials. The exclusion criteria were narrative reviews and uninvited opinion articles. The retrieved evidence was analyzed by members of the AMSB&H, then discussed at 2020 annual meeting of the AMSB&H and adopted by nominal group technique. Results: In total 14 recommendations were made, based on A to C class of evidence. The editors should educate potential authors and instruct them how to structure their manuscript, how to write every segment of the manuscript, and take care about correct use of statistical tests. Plagiarism detection softwares should be used regularly, and statistical and technical editing should be rigorous and thorough. International standards of reporting specific types of studies should be followed, and principles of ethical and responsible behavior of editors, reviewers and authors should be published on the journal’s web site. The editors should insist on registration of clinical studies before submission, and check whether non-essential personal information is removed from the articles; when essential personal information has to be included, an article should not be published without signed informed consent by the patient to whom these information relate. Conclusions: Principles of editing biomedical scientific journals recommended in this guideline should serve as one of the means of improving medical journals’ quality. Keywords: medical journals, editing, evidence-based, recommendations.

1. BACKGROUND
There is great need to improve editing of medical journals, both on regional and global level. Numerous studies, editorials, expert opinions and other types of publications direct our attention to weaknesses and mistakes of editing that have or will have adverse consequences to ultimate goal of writing in health sciences: to discover and establish truth about medical phenomena. Just in one study of highly ranked orthopedic journals citation error rate of 41% was found (1). Editors of medical journals are faced with a number of problems that are mostly caused by ignorance or inexperience of the authors: duplicate submissions, inadequately prepared submissions, insufficient availability of competent and knowledgeable reviewers, low methodological quality of the submissions, etc (2). However,

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Guidelines for Editing Biomedical Journals: Recommended by Academy of Medical Sciences of Bosnia and Herzegovina

2. OBJECTIVE

The aim of this article was to present guidelines for editing biomedical scientific journals based on evidence and adopted by the Academy of Medical Sciences of Bosnia & Herzegovina (AMSB&H).

3. METHODS

The evidence for writing this Guideline was systematically searched for during September 2020 in the PUBMED and GOOGLE SCHOLAR databases. The inclusion criteria were: original studies, systematic reviews, invited expert opinions, guidelines and editorials. The exclusion criteria were: narrative reviews and uninvited opinions. Search strategy included the following: ((("studies" [All Fields] OR "study" [All Fields]) OR "study s" [All Fields]) OR "studying" [All Fields] OR "studies" [All Fields]) AND ((("editorable" [All Fields] OR "edited" [All Fields]) OR "editing" [All Fields]) OR "edits" [All Fields]) AND ((("science" [MeSH Terms] OR "science" [All Fields]) OR "scientific" [All Fields]) OR "scientifically" [All Fields]) OR "scientification" [All Fields]) OR "scientificity" [All Fields]) OR "scientific" [All Fields]) AND ((("journal s" [All Fields] OR "journalism" [MeSH Terms]) OR "journalism" [All Fields]) OR "periodicals as topic" [MeSH Terms]) OR "periodicals as topic" [All Fields]) OR "periodicals" [All Fields] AND "topic" [All Fields]) OR "periodicals as topic" [All Fields]) OR "journals" [All Fields]) AND ((("medicin" [All Fields] OR "medicinal" [All Fields]) OR "medically" [All Fields]) OR "medicinals" [All Fields]) OR "medicine" [MeSH Terms]) OR "medicine" [All Fields]) OR "medicine s" [All Fields]) OR "medicines" [All Fields]). In total 65 publications were retrieved. Further "snowball" search was then made based on references of the articles retrieved from the primary search. The search was performed independently by SJ and IM, and the results then merged and agreed by themselves.

Original 11 recommendations prepared by the SJ and IM were amended with additional three, so final version of the guidelines with 14 recommendations was unanimously adopted and endorsed by the Academy of Medical Sciences of Bosnia & Herzegovina (AMSB&H) on its annual meeting held in Sarajevo, on November the 14th, 2020.

Classification of evidence and recommendations

Each of the recommendations from this Guideline is marked with quality of evidence (designated as: A – based on systematic reviews or meta-analyses; B – based on original studies; C – based on expert opinions and personal views) and level of recommendation (I – full recommendation; II – conditional recommendation; III – uncertain recommendation). The recommendations are numbered throughout the text with letter "R" and Arabic number.

4. RESULTS AND DISCUSSION

The recommendations:

R1. Abstract and text of an article should be structured in the following way: Background, Objective, Methods, Results and Discussion (full text)/Conclusion (abstract), or abbreviated–BOMRAD.

Quality of evidence: C
Level of recommendation: I

Explanation: In order to have all essential aspects of a scientific study presented, articles in medical journals should be structured (3). Usually medical journals request the IMRAD structure (introduction, method, results and discussion) which covers almost all issues, but objective of the study is left to preferences of an author, whether and in what form it will be added to the end of Introduction section. If the Objective is obligatory part of an article structure, it will be formulated more precisely and will include key elements of research question: independent variable, dependent variable and population. In this way Methods and Results sections will be more comprehensible to the readers, who will understand clearly what was measured and what factors were tested in the study (4).

R2. Basic tutorial for writing a scientific paper should be available to potential authors.

Quality of evidence: C
Level of recommendation: II

Explanation: A number of authors, especially beginners, are not acquainted with basic principles of writing scientific paper, and are not able to respond properly to criticism imposed by senior reviewers (5). Such a situation could result with rejection of manuscripts with new and relevant results because inexperienced researchers may become discouraged and give up from improving their manuscripts (6). Preparing simple tutorial with key principles and advices, and making it widely available through the journal’s web page, will in the same time teach the authors and direct them towards preparation of a manuscript with acceptable structure and form. Such a manuscript would be much easier to handle by the editors, and reviewers can pay more attention to its contents and key methodological issues.

R3. Readability of submitted manuscripts should be checked and English language experts should be engaged to edit the manuscripts and increase readability.

Quality of evidence: A
Level of recommendation: I

Explanation: Readability of journal articles is extremely important factor for attraction and keeping the readers interested in the journal. Comparative studies showed that readability of medical journal articles is relatively low, and does not increase substantially after peer review (7). Therefore, professional language editing service is key measure that may improve language and readability of articles in medical journals. The check-ups should be made by validated indices like Gunning’s and Flesch’s, preferably with software Right Writer, or else.

R4. Statistical Editor with excellent statistical expertise who will check and edit or request editing
statistical aspects of submitted manuscripts should be a member of editorial team.

Quality of evidence: C
Level of recommendation: I
Explanation: It is well known that using inadequate statistical methods to process raw study data lead to incorrect data interpretation and further to incorrect conclusions (8). This should be prevented at any cost since incorrect conclusions of published articles will have negative impact on future research that rely on such articles. It is crucial to use statistical tests only after all assumptions were met, and this should be checked by experienced and knowledgeable statistical editors, who will be able to foresee whether the errors are correctable or not, and if they are, to make plan that will help authors to re-process their data and obtain valid results (9). Statistical editors should be looked at as being guardians of scientific accuracy of the articles published in the medical journal (10).

R5. Technical editing of manuscripts between acceptance and publication should be strict and intensive.

Quality of evidence: A
Level of recommendation: II
Explanation: A systematic review of published randomized trials (only three were found) and observational studies (95 in total) showed that intensive and strict technical editing results with improved readability of the articles, improved reporting quality, fewer errors in abstracts and references. Structuring of the abstracts improves their quality, but makes them longer. Technical editing involves proof-reading, following 'house styles', taking care about grammatical rules and checking accuracy of cited references (11) (12) (13).

R6. Editors of medical journals should be trained in editing manuscripts and journals as a whole.

Quality of evidence: C
Level of recommendation: I
Explanation: Performing editorial tasks requires knowledge and skills in the following areas: standards of scientific writing, research design, statistical processing of data, English language and grammar, and research and publication ethics. The most influential medical journals with the longest tradition keep regular meetings of their editorial boards with educational topics and training workshops (14). There are reports of editing errors or even failures, especially in small and recent medical journals, caused by insufficient knowledge or lack of editorial skills (15) (16).

R7. Principles of ethical and responsible behavior of editors, reviewers and authors should be written in accordance with the Committee on Publication Ethics (COPE) best practices and published on a journal website.

Quality of evidence: A
Level of recommendation: I
Explanation: Systematic review of articles retracted from scientific journals found that main reason for retraction is research misconduct, especially plagiarism (in about 60% of cases) (17). Research misconduct was even more often reason for retraction in rehabilitation and sport sciences journals – 79% of cases (18). Having well written, complete and instructional principles of ethical and responsible behavior of editors, reviewers and authors on a journal website can prevent unethical behavior and increase quality of the journal (19). Surveys of the most influential medical journals showed that more complete and instructional ethical policies of the journals were associated with higher journal ranks (20). However, a plethora of medical journals still do not have properly written and presented ethical issues; recent online survey of researchers from more than 100 countries found that only 9% of them felt as having "substantial knowledge" of publication ethics (21). Certainly the best way to write complete and instructional principles of ethical and responsible behavior of editors, reviewers and authors is to tailor it according to recommendations from the Committee on Publication Ethics (COPE) (22).

R8. All manuscripts submitted for publication should be checked for plagiarism by one of the validated softwares. Positive results should be confirmed by manual check.

Quality of evidence: A
Level of recommendation: I
Explanation: Plagiarism is still very common, and usually committed by young researchers who are not aware of publication ethics. Recent survey of 495 articles from 100 African medical journals found evidence of plagiarism in 63% (23). Much lower rate of plagiarism was found in manuscripts submitted to the Croatian medical journal that announced use of plagiarism detection software (11% of 754 submitted manuscripts were having plagiarized parts, also confirmed by manual check) (24). Large study of 4,050 papers published in English language from 2009–2014 in Korean medical journals proved positive effect of introducing routine use of plagiarism detection software: percent of plagiarized papers decreased from 5.2% in 2009 to 1.7% in 2014 (25).

R9. Database on which the submitted manuscript is based on should also be submitted to the journal as supplementary file.

Quality of evidence: C
Level of recommendation: II
Explanation: Even in medical journals with the highest rank of influence (Journal of the American Medical Association, Canadian Medical Association Journal, British Medical Journal, and Lancet) almost 21% of publishing authors had discovered incorrect data in their manuscripts, and 4% discovered fraudulent data (26). Results of this survey question integrity and reliability of data on which original articles are based on. Although the authors may use some measures for protection of data reliability, like double data entry and data check by several authors, journals should conduct an additional precaution by having insight in raw data (27). Raw data or statistical reports should be made available also to all members of scientific community, so there is possibility to verify the results described in the manuscript or published article itself (28).

R10. International standards of reporting various
types of studies should be adhered to by the authors submitting manuscripts to medical journals. Editors should ensure adherence through double check made by reviewers and the editor themselves.

**Quality of evidence:** B

**Level of recommendation:** I

**Explanation:** A reader of a scientific article can be confident in its contents only if all essential elements of methodology and results were reported. There is a number of international standards agreed on by scientific societies or associations for various types of studies, including: Standards for reporting qualitative research (SRQR) (29), Consolidated Standards of Reporting Trials for Patient-Reported Outcomes (CONSORT PRO) (30), Consensus on Exercise Reporting Template (CERT) (30), Standards of Evidence for Conducting and Reporting Economic Evaluations in Prevention Science (31), Reporting of studies Conducted using Observational Routinely-collected health Data (RECORD) (32), Consolidated Standards of Reporting Trials (CONSORT) (33), the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines (34), etc. Surveys of adherence to standards of reporting showed that even in highly ranked journals, like New England Journal of Medicine or Lancet, the adherence rate reached no more than 55% and 78%, respectively (35). Editors should add requirements for adherence to specific standards of reporting in Instructions for authors, and check if it was achieved through the reviewing and editing process.

R11. The editors of medical journals should accept submissions of original studies only after they are registered in a national or international research registry.

**Quality of evidence:** C

**Level of recommendation:** I

**Explanation:** In the World Medical Association’s Declaration of Helsinki – Ethical Principles for Medical Research involving Human Subjects, version 2013, it is explicitly required that a study involving human subjects has to be registered in a public registry before its onset. There are several international registries available: „ClinicalTrials.gov” database of US National Institute of Health; „International Clinical Trials Registry Platform” (ICTRP) of World Health Organization; PROSPERO database of systematic reviews and meta-analyses by University of York Centre for Reviews and Dissemination, United Kingdom; Cochrane Database of Systematic reviews, the part of the Cochrane collaboration; and Research Registry, launched in 2015 and registering all types of both experimental and observational clinical studies (36). However, national or regional registries are also allowed, and China, Brazil and some other countries already used this opportunity to make their own registries (37).

R12. Editorial board should be balanced in regard to proportion of male and female members.

**Quality of evidence:** A

**Level of recommendation:** I

**Explanation:** Underrepresentation of women in editorial boards of medical journals was noted in Pakistan (only 17.5% women in the boards of 79 journals) (38), United States of America (out of 12 major medical journals only 5 had “parity between the percentages of women on editorial boards of specialty journals and women physicians” and only 1 had more female than male editors) (39), and at global level (in editorial boards of 50 top-ranked journals of 12 Thomson Reuters Web of Knowledge Journal Citation Reports categories only 17.5% of members were females) (40). Increasing participation of women in editorial boards is not only question of gender equality, but women can substantially improve quality of the editing through introducing diversity in the publication process, i.e. broadening scope of topics that are felt interesting for publication (41).

R13. Personal information about research subjects or patients described in case reports should not appear in published articles if not essential for understanding scientific facts.

**Quality of evidence:** C

**Level of recommendation:** I

**Explanation:** Personal information is an information referring to an individual that gives an opportunity to identify this individual by his/her full name, social security or other registration number, photograph, date and place of birth, etc. Editors should demand from the authors who submit manuscripts removal of all non-essential personal information from photographs, figures, tables and text of the article itself, so the readers cannot conclude whose data were presented in the article. Final check-up of an article by technical editor before the publication should also include search and removal of any non-essential personal information, if missed to be removed previously by the author(s) and chief editor. Stringent avoidance of publishing personal information protects basic human rights on privacy and dignity (42), and keeps medical journals and editors safe of litigation issues.

R14. If personal information is essential for understanding scientific facts, it could be published in articles of medical journals, but only after the patient (or parent or guardian) gives written consent after being introduced with the article’s galley proofs.

**Quality of evidence:** C

**Level of recommendation:** II

**Explanation:** In certain cases it is impossible to separate personal information from facts, figures, photographs or other media that describe the patient’s condition. Manuscripts about such cases could still be published, provided that the patient (or parent or guardian) gives written consent. However, the consent has to be fully informed, which means that the patient should have galley proofs of the article in his possession for at least 24 hours prior actually signing the consent form (43); this will give enough time to the patient to carefully read and understand the article and consequences of publishing his or her personal information within it.
5. CONCLUSION
Evidence-based guidelines for editing biomedical scientific journals created by the AMS&BKH should be endorsed by international associations of medical journals editors, and than followed by chief editors of the journals as a prerequisite of quality improvement (43-48).

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REFERENCES