The G.R.A.P.E. Checklist for Students of Healthcare to Finetune and Safeguard their Scholarly Manuscripts

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ABSTRACT

Structured scientific writing in medicine is seldom a part of curricula especially in non-native English-speaking countries. However, with the right tools and strategies, young researchers and academicians can be assured of artful dissemination of their research. The aim of this study is to propose a checklist that can help authors in structuring a polished scholarly manuscript. In order to achieve this, the authors carried out a literature search across prominent databases like PubMed, MEDLINE and Global Index Medicus to investigate the common reasons for retraction or rejection of manuscripts between 2020 to 2023. The inclusion criteria were as follows: reviews, observational studies, commentaries and editorials published in English since 2020 in the field of healthcare. A total of 32 results were identified, eight of which met the inclusion criteria. The eight included studies were from the field of dentistry, cardiology, neurology, spine surgery, anaesthesiology, nursing, and medically assisted reproduction. The most common reasons for article rejection or retraction were academic misconduct, designing errors, unintentional errors and data fraud. In order to overcome these flaws, the G.R.A.P.E. (Grammar, Reference Management, Archiving, Plagiarism, Equator-Network) checklist is proposed. Satisfying this checklist can result in a well-knit manuscript. The common reasons for article rejection/retraction can be avoided should students and academicians use the recommended strategies and tools as per the proposed checklist.

KEY WORDS

Academic publishing, Academic writing, Learning tool, Open educational resources, Research misconduct

INTRODUCTION

Every young researcher pursuing a specialized program in the faculty of medicine is funnelled into an unavoidable rendezvous spot. This is a zone of academic challenge that is contested between the ebullient minds of young scholars wanting to express their research and their wavering confidence in jotting it down. To fill this mental void, novice researchers have to fulfill some mandatory regulations to enhance their research aptitude.

There are several instances when rookie scholars would brood over how they can structure and disseminate their work. This arises from the daunting fact that academic writing is seldom given importance even in specialized courses or programs. The issue is further exaggerated when the deficit of this domain of research finds its absence in the curricula; especially in countries where English is a non-native language.

The objective of this paper is to serve the readers with a checklist that can help students of healthcare avoid the most common and recently reported reasons for rejection and retraction of scientific manuscripts. The mnemonic 'G.R.A.P.E.' is employed to easily memorize these axioms.

METHODOLOGY

A literature search was carried out across PubMed, MEDLINE, and Global Index Medicus to search for articles that reported the common reasons for rejection and retraction of scientific manuscripts in the field of medicine.

Details regarding the identification, screening and inclusion of the studies can be found in figure 1.

The type of studies included in the data analysis were reviews, observational studies, editorials, and commentaries written in English and published between 2020-2023. A total of 32 articles were screened, out of which 8 that were related to the field of medicine were tabulated for the final analysis.

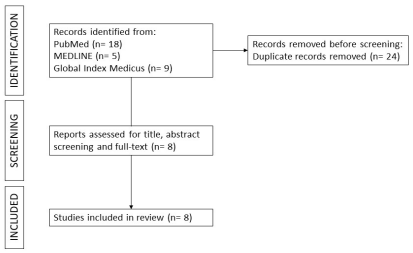

Figure 1. Shows details regarding the identification, screening and inclusion.

RESULTS

The most common reasons for rejection or retraction of scientific articles in the eight included studies were identified. The included studies were from the following fields of medicine: dentistry, neurology, cardiology, anaesthesiology, spine surgery, nursing, and medically assisted reproduction. The most common reason for rejection/retraction was academic misconduct, which included duplication, plagiarism, and falsification. Other notable reasons were scientific & and design errors, unintentional errors or mistakes, and data fraud (Table 1).

THE G.R.A.P.E. CHECKLIST

The primary approach to avoid journal rejection and retraction is by ensuring a structured manner of scientific writing. To overcome the roadblocks of dissemination, the G.R.A.P.E. (Grammar, Reference Management, Archiving, Plagiarism, Equator-Network) checklist can help authors ensure that the groundwork for the article is invulnerable.

Grammar

Lapses in grammatical syntax and semantics are some of the most common reasons for manuscript rejection.[1,2] Structuring a manuscript that flows in a logical pattern is easy to visualize, but difficult to execute. Such an 'unintentional academic error' can be overcome by adhering to the principles of Gerlier, answering Bradford Hill's questions, and following consistency of style.[3-5]

When the aspiring researcher banks upon the five 'pillars' laid out by Gerlier for documenting a scientific paper, a fine blueprint of the manuscript is drawn. These five principles are outlined in Table 2.

Any written manuscript must have the capacity to answer all the questions asked by Sir Austin Bradford Hill. In an editors' conference of the British Medical Journal, Hill asked four fundamental questions, the answers to which

Table 1. List of included articles that were screened

Year	Author	Articles Screened	Field of Medicine	Common Reasons for Retraction/Rejection
2020	Nair et al.	350	Anaesthesiology	-Data fraud (49.4%) -Lack of ethical approval (28%) -Duplication, Plagiarism, and Methodology issues (22.6%)
2020	Rapani et al.	180	Dentistry	-Academic misconduct (65%) -Honest scientific errors (12.2%) -Publisher-related issues (10.6%)
2021	Audisio et al.	459	Cardiology	-Academic misconduct (65%)
2022	Joaquim et al.	274	Nursing	-Academic misconduct (75%) -Designing errors (25%)
2022	Wadgave and Khairnar	143	Dentistry	-Redundant publication (35%) -Plagiarism (30.1%) -Data Manipulation (32.2%)
2023	Wang et al.	79	Neurology	-Academic misconduct (79.5%) -Academic unintentional mistakes (20.25%)
2023	Levett et al.	65	Spine Surgery	-Data fraud (21.13%) -Plagiarism (19.72%) -Shotgunning (19.72%) -Others (39.43%)
2023	Minetto et al	2458	Medically Assisted Reproduction	-Plagiarism (30.2%) -Duplication (25.6%) -Data errors (20.9%)

Table 2. Gerlier's Principles and its interpretation

Gerlier's Principles	Meaning
Brevity	Avoid unnecessary lengthening and detailing of unwanted parts that are of little importance to your research work.
Precision	Ensure that each statement contains keywords that aid the reader in drawing a picture of what you want to convey about your research. The culmination of consistently placed impactful lines keeps the reader afloat.
Relevance	Every sentence must be relevant to the research topic. Bridging two or more unrelated concepts is a leeway that writers must smartly utilize.
Consistency	Arguably the most difficult principle to satisfy as it demands the writer to maintain the level of grammar while simultaneously ensuring a streamlined and meticulous flow of words.
Concept	A conceptually flawed document is as good as a blank sheet of paper. If novelty fails to defend itself, the creative quotient of the research plots a sharp drop.

would justify the reasons for the written dissemination of research (Fig. 2).[4]

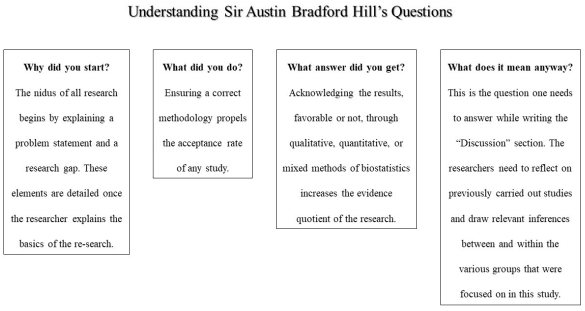

Figure 2. Shows the four questions asked were a catalyst for establishing the IMRD format of manuscript writing.

By no means shall the reader refer to the incoming line as the authors' bias. Consistency of Style (CoS) is the most important feature of your written presentation. CoS refers to the minute detailing that the author does to improve the visual appeal of the manuscript.[5] This includes justification of consistent font size and styles at different levels of headings, maintaining the same in tables, figures, and their legends, and respecting the sentence length and word limit where applicable. CoS can be imagined as the final strokes of the brush of the artist while simultaneously making the author morally realize the need to be pedantic when needed.

The advent of various software (Grammarly, QuillBot, etc) for rectification of grammatical errors has proven to be beneficial for non-native English speakers in improving the standards of their manuscripts. We have now reached a stage where it is imperative to use these digital incantations of language augmentation.

Reference Management

When students of research finally understand the objectives of the study that they wish to address, a thorough literature search is carried out across reputed databases and grey literature. Despite the use of truncations and Boolean Operators, the literature search can display a massive count of search results that often flummox the researcher.

The late 1970s and early 1980s were a period in research where computers gradually crept their way into the world of referencing and management.[6-8] The days of using manila folders to document key research works paved the way for floppy disks wherein data could be digitally stored. Soon, the systematic method of searching literature was established with the complete digitization of MEDLINE and Index Medicus.[9]

In the Gen Z era, the days of floppy disks are long gone and online cloud storage system has eased how chunks of data can be stored, cross-referred, and cited.[10] EndNote, Mendeley, and Zotero are some of the most commonly used reference management software (RMS). The selection of an RMS depends on the following factors:

- Ease of learning
- Access and availability of technical support
- Cost
- Storage
- Availability of different citation styles
- Access to different databases
- Ability to import citations
- Ability to remove duplicates
- Ability to allow portability of references through cloud storage
- Compatible with different screen sizes
- Offline accessibility

Archiving

Archiving is the method of backing up and storing documents for later use. A RMS can only store references to back the evidence of a research work. However, documents like ethical committee clearance, statistical analysis of data, consent forms, university guidelines, and no objection certificates should be carefully archived. These are the documents that will add to the veracity of the research work when disseminated at a larger scale. The modes of archiving can be software (cloud storage accounts) or hardware (Universal Serial Bus or hard drives).

Plagiarism

The academic misconduct of plagiarism is a glaring violation of ethics in research. Plagiarism is much more criminal than simply a 'copy-and-paste' trait. The various facets of plagiarism are plagiarism of ideas, verbatim copying, paraphragiarism, text recycling, translational plagiarism, plagiarism of graphics, plagiarism with citation manipulation, and compound plagiarism.

Overlapping semantics, identical passages, privileged exposures to intellectual property, replicating identical figures, and self-made citations are how similarity and plagiarism detection software (e.g., Turnitin, iThenticate) function.[11,12]

Running a plagiarism check and availing of an anti-plagiarism certificate enhances the credibility of your research. Academic institutes in developing countries still struggle to have access to proprietary software and hence bank upon online platforms (e.g., Grammarly, PlagScan, etc).

Free access to tools that are usually expensive (like anti-plagiarism tools) encourages the students and instills a sense of ownership of their research. Plagiarism contributes to predatory publication and puts your research at risk of retraction and disqualification.

Equator-Network

Reporting of research must follow a particular guideline depending on the methodology that was executed. The Equator (Enhancing the QUAlity and Transparency of health Research) Network is one such international organization that has laid out the basic formats of reporting guidelines.[13] The website hosts a plethora of reporting guidelines for different study designs. If the drafting of the manuscript follows the recommended standards a scientific framework is established. This helps in avoiding negations due to design or methodological errors.

CONCLUSION

The readability and insightfulness of a written passage facilitate the verdict on its quality. These measures are analyzed based on how easy it is for the mind to perceive and the eyes to follow. Compliance with the G.R.A.P.E. checklist acts as a valuable tool for aspiring researchers and scholars to satisfy these aspects of a scientific manuscript. It further acts as a guide based on which their research can be successfully disseminated. Checking off all the criteria as explained above ensures that the researcher requires no other talisman for academic success.

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