EDITORIAL

Common mistakes when writing the conclusion of a research manuscript

Nando Ferreira PhD

Associate Professor, Division of Orthopaedics, Department of Surgical Sciences, Faculty of Medicine and Health Sciences, University of Stellenbosch, Tygerberg Hospital, Cape Town; nferreira@sun.ac.za

The last couple of years have seen a tremendous change in mindset towards research in South Africa. This was in part due to new Health Professions Council of South Africa (HPCSA) requirements to register as a specialist, resulting in an increased output of research from predominantly academic training centres. This renewed focus on conducting research was, however, not always reciprocated by support with the analysis and reporting of research findings.

Early career researchers often enter projects with grand ideals of changing the face of orthopaedics and making a tangible mark on the practice of our profession. Others undertake a research project and submit manuscripts for publication because they are obliged to do so as part of the MMed curriculum. Regardless of the motivation for conducting research, the lack of adequate research training and deficient support results in common mistakes being made when reporting study findings.

It is important to realise that well-conducted research, with important clinical implications, can be rejected by journal reviewers because of poor writing or overstating of results. Scientific writing follows a very specific organisational structure that consists of the Introduction, Methods, Results, and Discussion (IMRaD) in an attempt to answer a clear research question. This is then followed by a conclusion that is supported by the preceding data.

It is here where many authors make their biggest mistakes. Readers would frequently scan the abstract only, without critically appraising the research methodology and results. Erroneous or unsubstantiated conclusions could potentially change practice and negatively impact patient care. It is therefore vitally important to spend time on constructing a well-considered conclusion.

The conclusion should be an objective summary of the most important findings in response to the specific research question or hypothesis. A good conclusion states the principle topic, key arguments and counterpoint, and might suggest future research. It does not introduce 'new evidence' or information but focuses on the fundamental findings of the results and discussion sections. The conclusion should convey the importance of the research topic without overstating the results and without emotional or sentimental statements.

It is important to understand the methodological robustness of your study design and report your findings accordingly. Unless you have conducted a systematic review and meta-analysis or a well-designed and sufficiently powered randomised control trial (RCT), you are unable to make recommendations regarding management. Uncontrolled case series suffer problems that may bias causal inference and should therefore only report findings without making recommendations. On more than one occasion I have reviewed submissions where the authors conducted a retrospective review of a series of cases and then conclude that the proposed treatment strategy is the 'best'. This conclusion would not be substantiated with such a study design.

This does not mean that observational research is not without merit. Such studies may further medical knowledge by investigating a single aspect of a specific topic. Although this in itself might not be groundbreaking, it may serve to support current treatment rationale or to shed light on new potential research directions. If this is the case, highlight it and propose how to address the deficits in current knowledge.

Remember, good researchers are able to generate more research questions with each paper they publish.