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How to write 'method' in scientific journal article

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The methods section of a research paper is the most important because it provides both 'methods and materials used in the procedures' of the study. This section is the basis for credibility of the work, with enough details so as the same study can be replicated in future to validate the process and results. A detail information is required on design of the study, participants, equipment and materials used, variables studied, actions or reaction of the participants, ethical approval, analysis and statistical tools used. The information on participants should include who, how many, how they were included in the selection, why excluded and adherence to ethical practices, ethical approval, how sample size was calculated and what were sampling techniques. The description on materials should include all materials, measures, equipments, details of special equipment etc. The design of the study should include when it was done, where, how data were collected, type of study for e.g. cross sectional, comparative, randomized etc.

The step by step details of how the study 'progressed', so as the reader understands the logical flow and can replicate similar study based on the description provided in this section.

Science is based upon and progresses on how best the claimed research can be “reproduced” on the methods described in the scientific write up and publication. This signifies the importance of application of research and publication for the benefit of society. The details are necessary, yet it should not unnecessarily include every bits and pieces of information on methods and material that do not contribute for the ‘re-do’ of the work. Deficiencies in the methods eventually will affect the results and finally discussion. Thus the methods section is vital for initial acceptance for publication. The defects in design upon which the study is based upon and completed for submission to a scientific journal is often the cause of ‘rejection’. This is because the ‘design and process’ of the study cannot be undone unlike other sections which can be ‘rewritten’ and language revised.

Few tips to remember are: method is written in past tense, details for replication in future. The heading has various forms, ‘materials and methods’, simply ‘methods’ in different combinations with or without ‘s’, ‘and’ or ‘&’.

The best way to judge adequacy of this section is to ask a colleague, preferably not involved in the study, to read and see whether he/she understands the process, and if needed can ‘re-do’ based on the methods described.

This section do not have ‘references’ except when using a standard published method, the relevant source can be ‘cited’ so as repetition is avoided to save time and words. Similarly, the table and or figure is not included.

The exception is to include a flow chart to clearly demonstrate how samples were selected, rejected, and compared, for e.g. the flow diagram of ‘randomized control trial’.

Finally, the merit of a manuscript hangs on method section because it provides the information by which the validity of the study is judged, and provides detail so that the work can be repeated to reproduce and validate the results.

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