equator network

Structure of a medical research paper: key content elements, writing tips and examples of reporting guidelines from the EQUATOR website

Section	Key content *	**Reporting guidelines** that provide recommendations on reporting information relating to:			
		Study design / methodology • Generic framework for reporting key methodology aspects of: - Main study designs (generic guidelines) - More specialised designs - Specific methods, evaluations, analyses • No details relating to specific to diseases		**Specific discipline / clinical area** • Key focus is on discipline / clinical area specific issues • May or may not address general methodology items	
		Framework for a complete research study / research paper **Examples include:**	Framework for only a part of the research study / research paper **Examples include:**	Framework for a complete research study / paper **Examples include:**	Framework for only a part of the research study / paper **Examples include:**
Title	Indicate the focus of the paper and include important relevant 'keywords' to allow identification of the study through electronic searches. Be concise, precise, and informative.	**Main study designs** (generic guidelines): CONSORT: parallel randomised trials STROBE: observational studies in epidemiology STARD: diagnostic accuracy studies COREQ: qualitative research SQUIRE: quality improvement studies COGS: clinical practice guidelines PRISMA: systematic reviews MOOSE: systematic reviews of observational studies in epidemiology Case reports **More specialised designs** (often extending the generic guidance): CONSORT for cluster trials CONSORT non-inferiority trials CONSORT for pragmatic trials		TREND: non-randomised studies of behavioural and public health interventions REMARK: tumour marker prognostic studies STARE-HI: evaluation studies in health informatics Longitudinal studies in rheumatology Adverse events reports in traditional Chinese medicine Case series of colon tumours	
Abstract	Most journals require a structured abstract, typically including key information on the following: - Objectives - Methods (setting, participants, intervention, main outcome measures) - Results - Conclusions		CONSORT for abstracts STROBE for abstracts		STARE-HI for abstracts of studies in health informatics
Introduction	Provide the scientific background and clearly explain what questions you were trying to answer. Be brief and relevant to the study: start from a broad context of what is already known, proceed to the specific unknown problems, and finish with clearly stated study objectives				
Methods	Describe in a logical sequence how the study was designed, carried out, and analysed. A typical methods section provides key information on the following: - Setting, location - Participants (or objects) - Study design including planned sample size - Interventions (or exposures) - Outcomes (variables) - All statistical methods - Ethical issues (e.g. consent) Information should be clear, accurate, and complete (provide enough details to repeat, assess, and compare with other studies) Content should correspond with the Result section		Statistical guidelines: Bayesian analysis in clinical trials Subgroup analyses in trials Economic evaluations: Cost-effectiveness analysis Economic evaluations in trials Quality of life assessment in trials STARLITE: literature searches		Intervention: STRICTA (CONSORT extension for acupuncture trials) Cancer pain educational interventions Procedures: Cardiovascular magnetic resonance examinations Statistical guidelines: Multivariate logistic regression in transplantation research Economic evaluations: Economic evaluations in obstetrics Quality of life assessment in cancer trials

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Results	Report results of the investigations described in the Methods section (in same order) using text, tables, figures, and statistics Be as brief and clear as possible (but don't leave out 'disappointing' results) A typical structure and chronology includes: - Description of study participants (if relevant, separately for important subgroups) - Presentation of answers to the main questions (starting with primary outcomes, then secondary outcomes, and any other analyses) Report on harms (adverse effects) as well as benefits, if relevant Outline any ways in which the study did not follow the prespecified plan. Pay special attention to presentation of data and results in tables and figures		<u>Statistical guidelines:</u> Heterogeneity in trial treatment effects Missing data Figures, graphs		Statistical results in case-control designs in neuropsychology
Discussion	Discuss what your findings mean and where they stand in the context of other studies A typical discussion section structure and chronology includes: - Brief presentation of the main findings - Assessment of study strengths and weaknesses - Comparison of findings with previous studies - Consideration of clinical and scientific implications - If relevant, suggestions for future research		Structured discussion Research recommendations		
Conclusions	This section is not always presented separately in a research article Any conclusions must be fully supported by the study findings				
Acknowledgements	State source of funding and any relevant conflict of interest Acknowledge any person who contributed to the study but who does not qualify as an author		Conflict of Interest: ICMJE, WAME guidelines		

* Key content column lists basic general content of a primary research paper