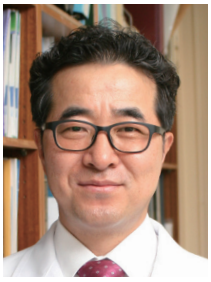
APS
Archives of Plastic Surgery

Writing an Evidence-Based Articles in Plastic Surgery Field



Yong-Ha Kim

Co-Editor, Archives of Plastic Surgery

Many beginning writers, especially medical residents, feel difficulties in writing journal articles. However, illogical and unscientific papers are not accepted for publication even if their topics are creative and interesting. The authors should do their best to convince reviewers and readers of their opinions using evidence through reasoning, explanation, and data interpretation.

The aim of this article is to review evidence-based medicine (EBM) and reporting guidelines and to assist authors in composing plastic surgery papers with a logical argument.

The concept of EBM was initially suggested in 1979 by Archie Cochrane, who was a British epidemiologist. Since then, the trend of modern medicine has been toward completely evidence-based decision making [1]. Recently, the American Society of Plastic Surgeons (ASPS) and the journal *Plastic and Reconstructive Surgery* (PRS) have been actively working to build a foundation for EBM in the plastic surgery field [2].

In August 2010, various plastic surgery researchers and journal editors had a conference in Colorado Springs, US for the integration of EBM into the field of plastic surgery. At the conference, it was decided that the level of evidence and a visual icon of the evidence pyramid would be displayed at the end of the abstract of every article, except some that could not be rated, with classification of the research into one of these categories: diagnostic, therapeutic, prognostic, and risk. This decision has been in effect in PRS since January 1, 2011 [3]. Among the evidence levels assigned in PRS, level 1 represents the highest or strongest level of evidence, while level 5 is the lowest. The types of studies in level 3 include retrospective cohort studies and case control studies. The case series is included in level 4 [4]. The average level of plastic surgery articles submitted to PRS is 3.2 and most are between 3 and 4.

The reasons for the relatively low levels in the field of plastic surgery are that each patient has highly variable requirements and some cases are rare due to the nature of plastic surgery, and there are diverse approaches to treating a given diagnosis [5]. To overcome these limitations, PRS estimate the level of evidence on all articles according to subsections. And PRS recommends that researchers aim to produce prospective cohort studies, which are in level 2, and eventually even level 1, randomized controlled studies, even though researchers typically start out by publishing level 3, 4, or 5 articles [3,6].

As the Korean Society of Plastic and Reconstructive Surgeons has revised the submission guidelines for this journal, the *Archives Plastic Surgery* (APS), it is now recommended that articles be written using five reporting guidelines, which are provided in the appendix, to improve the evidence level (Table 1).

Because there are many articles at levels 3, 4, and 5 due to

Table 1. Reporting guidelines for specific study designs in *Archives Plastic Surgery*

Initiative	Type of study	Source
CONSORT	Randomized controlled trials	http://www.consort-statement.org/
STARD	Studies of diagnostic accuracy	http://www.consort-statement.org/stardstatement.htm
QUOROM	Systematic reviews and meta-analyses	http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf
STROBE	Observational studies in epidemiology	http://www.strobe-statement.org/
MOOSE	Meta-analyses of observational studies in epidemiology	http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf

Table 2. Strengthening the Reporting of Observational Studies in Epidemiology Statement–checklist of items that should be included in reports of observational studies

	Item No.	Recommendation
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(a) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up
		Case-control study—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls
		Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants
		(b) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed
		Case-control study—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding
		(b) Describe any methods used to examine subgroups and interactions
		(c) Explain how missing data were addressed
		(d) *Cohort study*—If applicable, explain how loss to follow-up was addressed
		Case-control study—If applicable, explain how matching of cases and controls was addressed
		Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy
		(e) Describe any sensitivity analyses
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
		(c) *Cohort study*—Summarise follow-up time (e.g., average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(b) Report category boundaries when continuous variables were categorized
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.
Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

the nature of the plastic surgery field, referring to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE), which is suitable for observational studies, would be useful. Although STROBE is a guideline developed for observational studies in epidemiology, it is also applicable to plastic surgery. In particular, if the STROBE checklist were applied to retrospective cohort studies, case control studies, case series, and case reports, important information that should be in the articles would not be omitted and the transparency of research results would be achieved [7]. On their website (www.strobe-statement.org), the STROBE research group also publicly announces the latest research results on guidelines, and revisions to the guidelines under ongoing development by researchers and editors. In addition, checklists are provided free of charge to readers in PDF and Word formats (Table 2).

If and when you do a game, you need to know the rules first. Writing an article is much easier when you know the rules and have a set of guidelines to follow. It is hoped that the resources provided here will assist the readers of APS to become successful researchers and authors.

REFERENCES

1. Coroneos CJ, Ignacy TA, Thoma A. Designing and reporting case series in plastic surgery. Plast Reconstr Surg 2011; 128:361e-8e.
2. Chung KC, Ram AN. Evidence-based medicine: the fourth revolution in American medicine? Plast Reconstr Surg 2009; 123:389-98.
3. Chung KC, Swanson JA, Schmitz D, et al. Introducing evidence-based medicine to plastic and reconstructive surgery. Plast Reconstr Surg 2009;123:1385-9.
4. Sullivan D, Chung KC, Eaves FF 3rd, et al. The level of evidence pyramid: indicating levels of evidence in Plastic and Reconstructive Surgery articles. Plast Reconstr Surg 2011; 128:311-4.
5. McCarthy CM, Collins ED, Pusic AL. Where do we find the best evidence? Plast Reconstr Surg 2008;122:1942-7.
6. Swanson JA, Schmitz D, Chung KC. How to practice evidence-based medicine. Plast Reconstr Surg 2010;126:286- 94.
7. Song JW, Chung KC. Observational studies: cohort and case-control studies. Plast Reconstr Surg 2010;126:2234-42.

Correspondence: Yong-Ha Kim
Departmenr of Plastic and Reconsructive Surgery, Yeungnam University Medical Center, Yeungnam University College of Medicine, 170 Hyeonchung-ro, Nam-gu, Daegu 705-717, Korea
Tel: +82-53-626-0705, Fax: +82-53-620-3480, E-mail: yhkim@med.yu.ac.kr

No potential conflict of interest relevant to this article was reported.

Received: 13 Jun 2013 • Revised: 25 Jun 2013 • Accepted: 25 Jun 2013

pISSN: 2234-6163 • eISSN: 2234-6171
http://dx.doi.org/10.5999/aps.2013.40.4.299 • Arch Plast Surg 2013;40:299-301