의학논문
-학술지 편집인의 관점-

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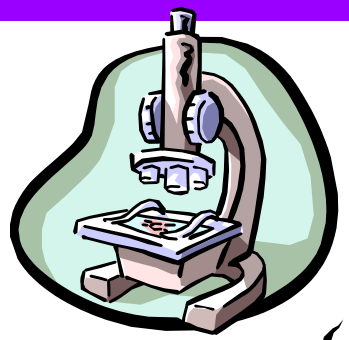
Executive Editor, Yonsei Medical Journal

Research Paper?

Academic writing
Systematic
publish

Research paper ?



Scientific writing

- Void for vaqueness (明確性 原則)
- communication

Science *Vs.* Magic

- Study results should be published
- Replication

Purpose of scientific research

- ‘publication’

Definition of scientific paper

- Originality, write/publish
- An acceptable primary scientific publication (Council of Biology Editors)
  - first disclosure
  - Sufficient information
    - to assess observations
    - to repeat experiments
    - to evaluate intellectual processes

Planning a draft paper

Section	Question to be answered	Purpose	Expected length with A4 paper, font size 10–12 and 1-5 line spacing
Introduction	Why did you start?	Summarise the context of your study and state the aims clearly	1 page
Methods	What did you do?	Give enough detail for the study to be repeated	2–3 pages
Results	What did you find?	Describe the study sample and use the data analyses to answer the aims	2–3 pages
Tables and figures	What do the results show?	Clarify the results	3–6 tables or figures
Discussion	What does it mean?	Interpret your findings in context of other literature and describe their potential impact on health care	2–3 pages
References	Who else has done important work in your field?	Cite the most relevant and most recent literature	20–35 references
Total document			**12–20 pages**

How to write a paper, BMJ books

Journal format

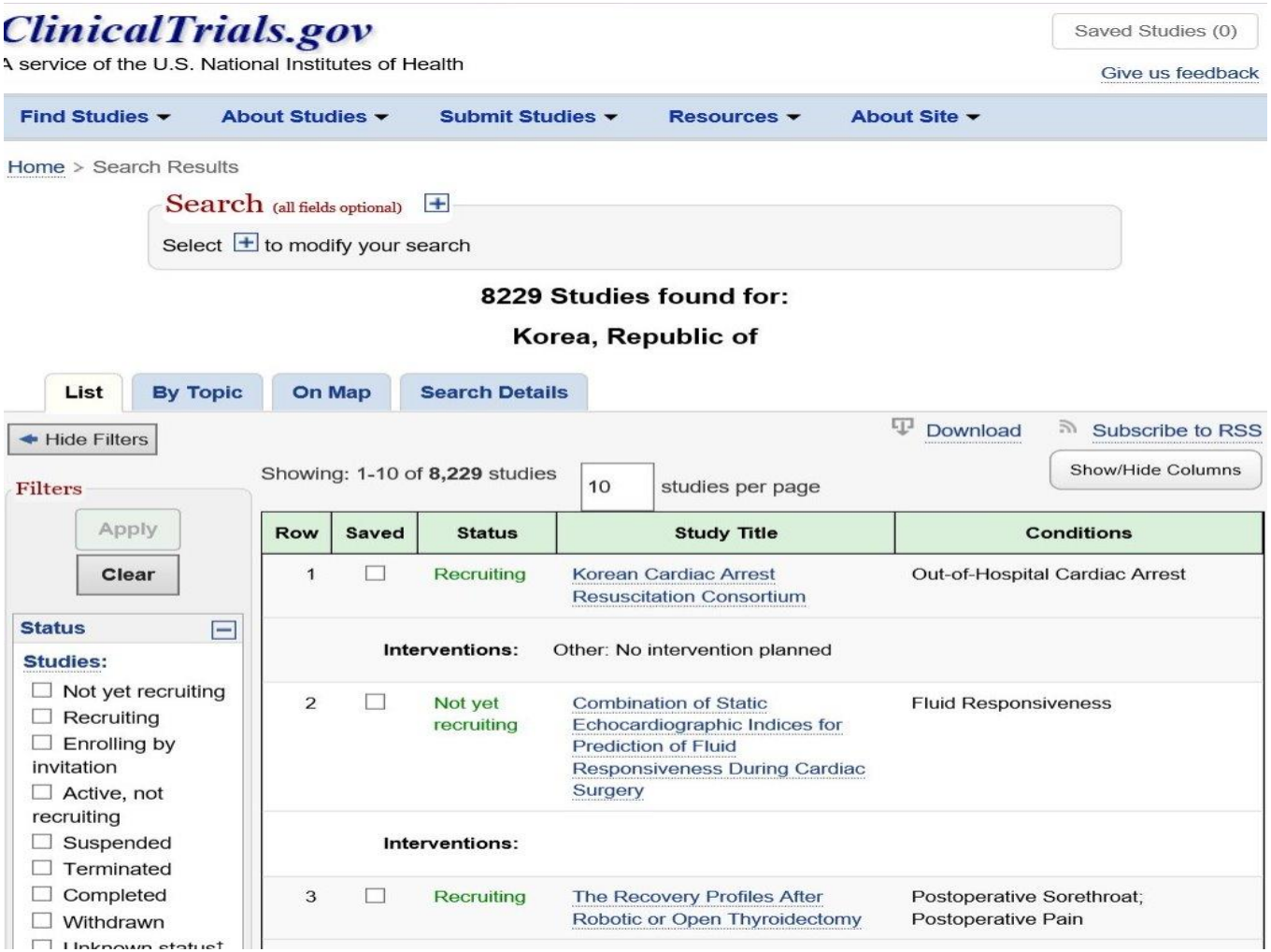
- Cover paper
- Manuscript
- Author agreement
- Copyright transfer agreement
- etc.,
  - ✓ STROBE Statement
  - ✓ Clinical trial registration
  - ✓ Consort statement

Research

- Open peer review
- Open access
- Open access institutional memberships
- Trial registration
- Registration of other studies - particularly observational studies
- The BMJ's policy on drug and devices trials
- Industry sponsored studies
- Data sharing
- Patients' involvement in research
- Data sharing statement
- How to prepare original research articles (full versions) for *The BMJ*
- BMJ Research to Publication elearning programme for health researchers

About The BMJ
Editorial staff
Advisory panel
Publishing mo
Complaints pr
History of The
Freelance con

Clinical trial registration



논문의 구조
Structure of a scientific paper

IMRAD format

- The object of publishing a scientific paper;
  - ✓ to provide a document that contains sufficient information to enable readers to:

    - assess the observations you made;
    - repeat the experiment if they wish;
    - determine whether the conclusions drawn are justified by the data.

  - ✓ I - introduction (What question was asked?)
  - ✓ M - methods (How was it studied?)
  - ✓ R – results (What was found?)
  - ✓ A - and
  - ✓ D - discussion (What do the findings mean?)

Cover letter

- Communication : Editor - author
- Originality
- Strength of study: results, **Clinical or Public health interest**
- Author agreement
- Conflict of interest (COI)

Abstract: Editor's perspective

- Structured or unstructured format
- Quality check
- Study importance / reliability
- Result : impact ?
- Screening stage -> reject without peer review

A population-based case-control study was conducted in Connecticut in 1996–2002 to test the hypothesis that lifetime hair-coloring product use increases non-Hodgkin's lymphoma risk. A total of 601 histologically confirmed incident female cases and 717 population-based controls were included in the study. An increased risk of non-Hodgkin's lymphoma was observed among women who reported use of hair-coloring products before 1980 (odds ratio = 1.3, 95% confidence interval (CI): 1.0, 1.8). The odds ratios were 2.1 (95% CI: 1.0, 4.0) for those using darker permanent hair-coloring products for more than 25 years and 1.7 (95% CI: 1.0, 2.8) for those who had more than 200 applications. Follicular type, B-cell, and low-grade lymphoma generally showed an increased risk. On the other hand, the authors found no increased risk of non-Hodgkin's lymphoma overall and by subtype of exposure and disease among women who started using hair-coloring products in 1980 or later. It is currently unknown why an increased risk of non-Hodgkin's lymphoma was found only among women who started using hair-coloring products before 1980. Further studies are warranted to show whether the observed association reflects the change in hair dye formula contents during the past two decades or indicates that recent users are still in their induction and latent periods.

case-control studies; Connecticut; hair dyes; lymphoma, non-Hodgkin; risk factors; women

<American Journal of Epidemiology>

Context Associations have been found between day-to-day particulate air pollution and incre
adverse health outcomes, including cardiopulmonary mortality. However, studies of health ef
particulate air pollution have been less conclusive.

Objective To assess the relationship between long-term exposure to fine particulate air pollu
lung cancer, and cardiopulmonary mortality.

Design, Setting, and Participants Vital status and cause of death data were collected by the A
Society as part of the Cancer Prevention II study, an ongoing prospective mortality study, whi
approximately 1.2 million adults in 1982. Participants completed a questionnaire detailing ind
data (age, sex, race, weight, height, smoking history, education, marital status, diet, alcohol c
occupational exposures). The risk factor data for approximately 500 000 adults were linked v
data for metropolitan areas throughout the United States and combined with vital status and
data through December 31, 1998.

Main Outcome Measure All-cause, lung cancer, and cardiopulmonary mortality.

Results Fine particulate and sulfur oxide–related pollution were associated with all-cause, lur
cardiopulmonary mortality. Each 10-μg/m^3 elevation in fine particulate air pollution was assoc
approximately a 4%, 6%, and 8% increased risk of all-cause, cardiopulmonary, and lung canc
respectively. Measures of coarse particle fraction and total suspended particles were not cons
with mortality.

Conclusion Long-term exposure to combustion-related fine particulate air pollution is an imp
environmental risk factor for cardiopulmonary and lung cancer mortality.

<JAMA>

Title ?

American Journal of Epidemiology
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Vol. 159, No. 2
Printed in U.S.A.
DOI: 10.1093/aje/kwh033

Hair-coloring Product Use and Risk of Non-Hodgkin's Lymphoma: A Population-based Case-Control Study in Connecticut

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Received for publication April 24, 2003; accepted for publication July 31, 2003.

Introduction (IMRAD)

Induction

or

inductive reasoning（歸納推論）

“ Tell readers why you have undertaken the study”

And “Clarify what your work adds”

Introduction (IMRAD)

- The introduction should be brief and must state clearly the question that you tried to answer in the study

- The introduction must not include a review of the literature.

  - ✓ Only cite those references that are essential to justify your proposed study.
  - ✓ Three citations from different groups usually are enough to convince most assessors that some fact is ‘ well known ’ or ‘ well recognized’, particularly if the studies are from different countries.
  - ✓ Many research groups write the introduction to a paper before the work is started, but you must never ignore pertinent literature published while the study is in progress.

Introduction (IMRAD)

An example introduction might be:

"It is well known that middle - aged male runners have diffuse brain damage,1-3 but whether this is present before they begin running or arises as a result of repeated cerebral contusions during exercise has not been established. In the present study, we examined cerebral function in a group of sedentary middle - aged men before and after a six month exercise program. Cerebral function was assessed by . . ."

Method (IMRAD)

- The main purposes of the methods section: Replication !!

  - ✓ To describe, and sometimes defend, the experimental design
  - ✓ To provide enough detail that a competent worker could repeat the study.

- To ensure reproducible data,

  - ✓ Give complete details of any new methods used;
  - ✓ Give the precision of the measurements undertaken;
  - ✓ Sensibly use statistical analysis.

Method (IMRAD)

How the study was designed

- Keep the description brief
- Say how randomization was done
- Use names to identify groups or sections of a study

How the study was carried out

- Describe how the participants were recruited and chosen
- Give reasons for excluding participants
- Consider mentioning ethical features
- Give accurate details of materials used
- Give exact drug dosages
- Give the exact form of treatment and accessible details of unusual apparatus

How the data were analyzed

- Use a P-value to disprove the null hypothesis
- Give an estimate of the power of the study (the likelihood of a false negative – the β error)
- Give the exact tests used for statistical analysis (chosen a priori)

Method (IMRAD)

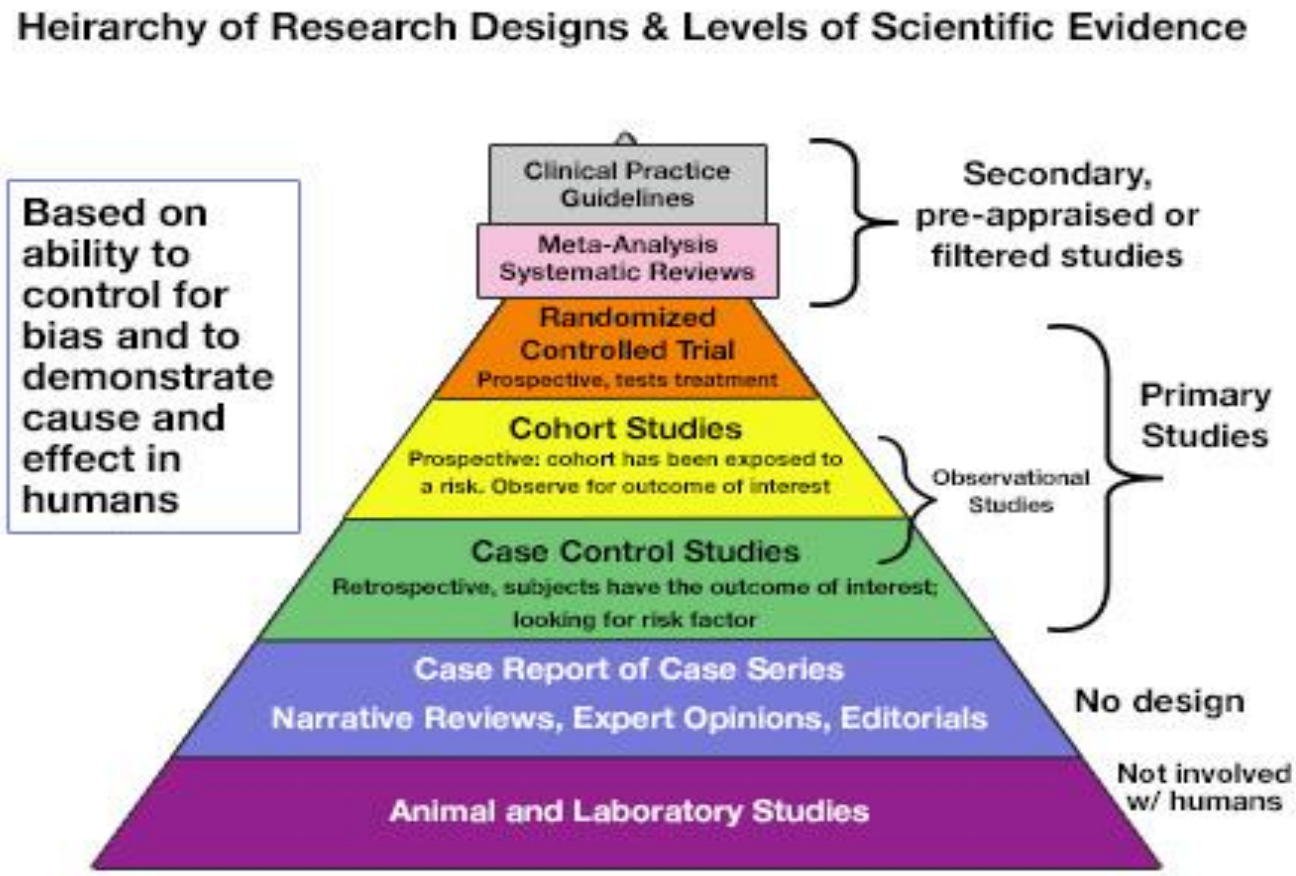
A good methods section; Editor's perspective

- Does the text describe
  - ✓ what question was being asked
  - ✓ what was being tested
  - ✓ how trustworthy are the measurements?

- Were the measurements recorded, analyzed and interpreted correctly?

- Would a suitably qualified reader be able to repeat the experiment in the same way?

Method (IMRAD)



결 과 (IMRAD)

Statistic inference

– Objectivity

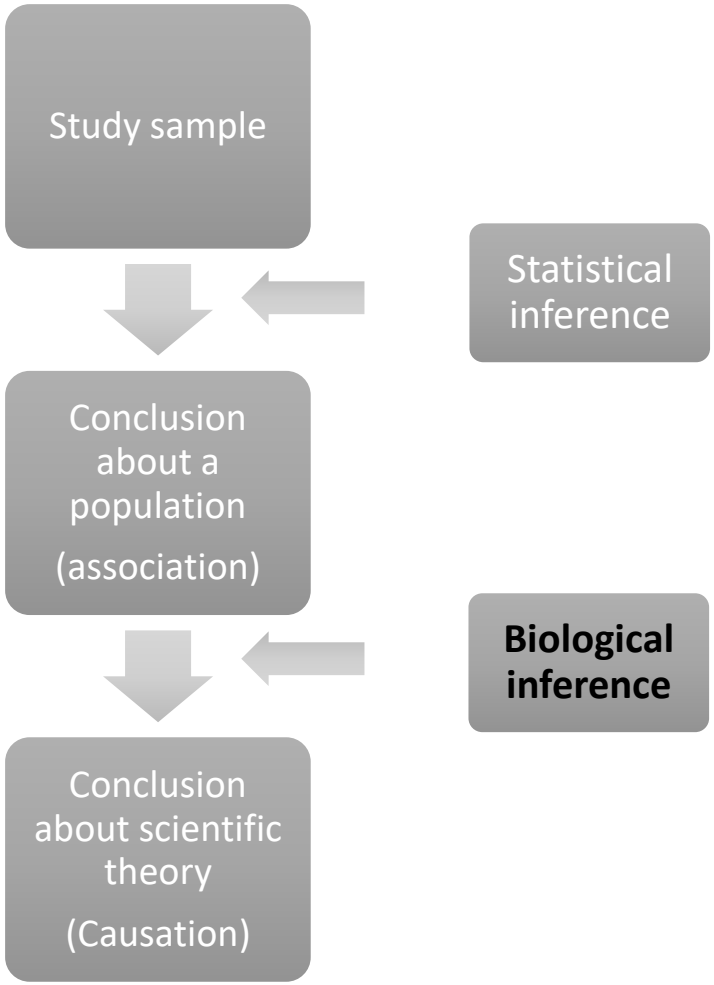
결 과 (IMRAD)

A well-written results section; Editor's perspective

- Account for all subjects in the study and double check that the number of subjects is consistent in the abstract, text, tables and figures.
- Be concise and emphasise the important findings.
- Do not repeat information provided in the tables.
- Minimise abbreviations.
- Describe the results from each table or figure in a separate paragraph.
- Begin each paragraph with a topic sentence but do not simply repeat the table or figure legend.
- Importantly, the results should be interpreted in the discussion, not in the results section.

고 찰(IMRAD)

- Causality
  - ✓ Biological inference
  - ✓ Replication
- Confounding or Bias



고 찰(IMRAD)

- Summarize the major findings
- Discuss possible problems with the methods used
- Compare your results with previous work
- Discuss the clinical and scientific implications of your findings
- Suggest further work
- Produce a succinct conclusion

참고문헌

REFERENCES

1. Greene MH. Non-Hodgkin's lymphoma and mycosis fungoides. In: Schottenfeld DD, Fraumeni JF Jr, eds. Cancer epidemiology and prevention. Philadelphia, PA: WB Saunders, 1983.
2. Cantor KP, Blair A, Everett G, et al. Hair dye use and risk of leukemia and lymphoma. Am J Public Health 1988;78:570–1.
3. Zahm SH, Weisenburger DD, Babbitt PA, et al. Use of hair-coloring products and the risk of lymphoma, multiple myeloma, and chronic lymphocytic leukemia. Am J Public Health 1992; 82:990–7.
4. Pearce N, Bethwaite P. Increasing incidence of non-Hodgkin's lymphoma: occupational and environmental factors. Cancer Res 1992;52(suppl):5496s–500s.
5. Grodstein F, Hennekens CH, Colditz GA, et al. A prospective study of permanent hair dye use and hematopoietic cancer. J

Editor는 어떻게 좋은 논문을 pick-up 하는가?

Editor’s perspective: review process

- Journal scope
  - ✓General medical journal
  - ✓Specific journal
  - ✓Topic : local, regional, international?
- Academic value:
  - ✓Originality
  - ✓Citation
  - ✓Clinical or public health interest

Article Review Process

https://authorservices.wiley.com/Reviewers/journal-reviewers/what-is-peer-review/the-peer-review-process.html

- **Initial Screening by Editorial office**
- Initial Review by Editorial office
- External Peer review
- Final decision by Editor or Editorial office

Reject : Initial Screening Process

사례 1	흥미로운 결과를 담고 있으나, preliminary data, poor statistical power, ...
사례 2	논문 내용이 새로운 것이 없습니다.
사례 3	학술지의 scope에 적합하지 않습니다.
사례 4	연구 design이 잘못되어 있습니다.
사례 5	논문에 철자 오류가 많고, 영어 수준이 너무 낮습니다.

Some examples of errors in design

- **Definite errors**
  - **Failure to use randomization in a controlled trial**
  - **Use of an inappropriate control group**
  - **Failure to anticipate regression to the mean**

- **Matters of judgment**
  - **Is the sample size large enough?**
  - **Is the response rate adequate?**

- **Poor reporting**
  - **Study aims not stated**
  - **Justification of sample size not given**
  - **In a controlled trial, method of randomization not stated**

Altman DG. Statistical reviewing for medical journals. Statistics in medicine 1998;17:2661-2674

Some examples of errors in the analysis

- **Definite errors**
  - **Unpaired method for paired data**
  - **Using a t-test for comparing survival times (censored)**
  - **Failure to take account of ordering of several groups**

- **Matters of judgment**
  - **Potential confounding variables?**
  - **Is the rationale for categorization of continuous variables clear?**
  - **Is use of parametric methods that are non-Normal**

- **Poor reporting**
  - **Failure to specify all methods used**
  - **Misuse of technical terms, such as quartile**
  - **Referring to unusual/obscure methods**

Altman DG. Statistical reviewing for medical journals. Statistics in medicine 1998;17:2661-2674

Some examples of errors in presentation

- ***Definite errors***
  - **Giving SE instead of SD to describe data**
  - **Results given only as *P-values***
  - **Failure to show all points in scatter diagrams**

- ***Matters of judgment***
  - **Would the data be better in a table or a figure?**
  - **Should we expect authors to have considered (and commented on) goodness-of-fit?**

- ***Poor reporting***
  - **Numerical results given to too many or, occasionally, too few decimal places**
  - **Reference to 'non-parametric data'**
  - **Tables that do not add up, or which do not agree with each other**

Altman DG. Statistical reviewing for medical journals. Statistics in medicine 1998;17:2661-2674

Some examples of errors in interpretation

- ***Definite errors***
  - **Failure to consider confidence interval when interpreting non-significant difference, especially in a small study**
  - **Drawing conclusions about causation from an observed association without supporting evidence**
- ***Matters of judgment***
  - **Have the authors taken adequate account of possible sources of bias?**
  - **How should multiplicity be handled**
  - **Is there over-reliance on *P-values?***
- ***Poor reporting***
  - **Discussion of analyses not included in the paper**
  - **Drawing conclusions not supported by the study data**

Altman DG. Statistical reviewing for medical journals. Statistics in medicine 1998;17:2661-2674

Review process should be..

- Academically..
  - ✓Study results inspection
  - ✓Promotion
  - ✓Communication

- For journal publisher..
  - ✓Selection process: valuable paper
  - ✓impact factor

High impact journal: Pick up

Reviewer's comment is just comments
Final decision : Editor

- Confidential comments
- Manuscript priority score

Editor’s review

- Study quality
  - ✓Language correction
  - ✓Statistical advise
  - ✓Title, abstract, Figure/Table correction
  - ✓Reference : up to date
- Appropriateness of reviewer’s comments

Thanks for your attention