Scientific Literature

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Search Sources

- PubMed http://www.ncbi.nlm.nih.gov/pubmed/
- Google Scholar http://scholar.google.com/
- CDC http://www.cdc.gov/

Initial interest

- The title and abstract should stimulate further reading
- Never judge a book by its cover, never cite an article when you have only read the abstract!

Sampling Method

- Did the authors provide information about:
  - Subject Recruitment?
  - Sampling method?
  - Control group?

- Does the sample seem to resemble the target population?

Tables

- Table 1 Usually has demographic data
  - Can determine if it applies to the target ppn
- Other tables have results
- The main results should provide an answer to the primary hypothesis
- Statistics should be presented clearly

Examination

- Look through the Methods and results
- Examine the author's interpretation of the results

Article critique

- Look up on PubMed the article you would like to critique.

In one paragraph for each, **describe** (describe how it was done) and **critique** (comment on weaknesses and strengths) for each of the

- Background/Intro
- Methods
- Results
- Discussion

A valid Study

- Uses a sample that reflects the population at interest
- Measures the variables of interest accurately
- Assesses and/or controls for bias
- Reports the role of chance

Title

- Should describe the scope of the paper
- May state the primary hypothesis
- Must not be wordy, but must be complete
- Helpful to include the study design
  - ie Double-masked, placebo-controlled, randomized trial of lutein and antioxidant supplementation in the intervention of atrophic age-related macular degeneration: the Veterans LAST study (Lutein Antioxidant Supplementation Trial).

Abstract

- Brief summary
- Broken into the components of the paper
  - Background/Introduction
  - Methods
  - Results
  - Discussion
  - Conclusions (sometimes)

Background or Introduction

- Reviews the current knowledge
  - Beginning from the known and accepted
  - Finishing with the unknown and controversial
- Justifies the importance of the current research for public health
- Justifies the approach
- Finally presents the purpose of the paper

Funnel method for background

- Well-known facts
- Basic Science
- Clinical Studies
- Controversy
- Unknown

Methods

- Contains the information necessary to evaluate the validity of the study
- Study design (type of study, recruitment strategies, data collection, data analysis)
- If the methods are not good, the study is worthless!
- Not every study that gets published has appropriate methodology, some journals are not peer-reviewed.

Purpose of the methods section

- States the facts of what the researcher did
- Must have enough detail so that a reader can evaluate the validity and potentially replicate the experiment
- Includes something about informed consent and IRB
- Parts:
  - Subjects
  - Equipment
  - Procedures

Results

- Table 1 presents the subjects demographics
- Present the results from the statistical analysis
- Should State the answer to the hypothesis
- **Should not include any author's interpretations**
- **Just the facts!**

Examples of results statements

- RESULTS: The SNP rs1635529 for COL2A1 on 12q13.11 showed highly significant over-transmission to affected individuals (p=0.00007). No SNP for FGF2, BDNF, COL18A1, or PAX6 showed significant over-transmission to affected individuals after correction for multiple comparisons. Markers on chromosome 12 and 18 previously associated with pathological myopia also showed no significant associations with the more common form of myopia in this study. (ORINDA)

Examples of results statements

- RESULTS: Multiple regression revealed a statistically significant difference between the groups, which supports the hypothesis that exposure X causes disease Y.

- Making an inference! Does not belong in the results

Discussion

- Allows the authors to offer their interpretation of the results
- Usually stated from most significant to least significant
- Outlines the strengths and weaknesses of the study
- Acknowledges potential for bias