

How to Write a Paper

Discussion

Global MECOR Course
Kenya, 2011

Purpose

- Answer The Question(s) posed in the Introduction
- Explain how the results support the answers
- Explain how the answers fit in with existing knowledge
- Acknowledge strengths/limitations of the study
- Cite areas of future research suggested by study findings

Answering the Question

- Answer The Question, exactly as asked (same terms, words, etc.)
- Use present tense
- “This study shows that Drug X improves lung function in children with asthma.”
- Refer to entire population that your study represents (Drug X is good for children with asthma (not just those in Santiago where the study took place; not necessarily in adults, though)

Answer vs. Results

- Usually not the same thing
- Answer is a generalization based on results
- Might highlight key results that support the answer
 - Avoid a simple restatement of results when doing this

Explain the Answer

- Why is this answer reasonable
- How does this answer fit in with previously published information?
 - “These results provide further evidence that . . .”
 - “Although previous studies showed that X works in adults, this study in children shows that”

Defending the Answer

- If your answer to The Question contradicts previously published studies or is surprising
 - explain why you believe your answer is valid and others are not
 - may help to cite limitations of other studies or differences in populations/methods used
 - pro and con arguments can make your answer more convincing

Explain Conflicting and Unexpected Results

- Mention results that do not support your answer
- Explain them as best as you can
- Unexpected findings can be minor or exciting
- “The finding of greater mortality in those with higher income was unexpected . . . A potential explanation for this finding is . . .”

Highlight newness and importance of findings

- Newness should be established in Introduction (what is unknown)
- Refer to this in the Discussion to remind the reader of the novelty of your study
- Avoid claim of being the “first” to show something or having the “best” study
 - You’re probably not right!
- Describe implications and applications of the findings (often at end of discussion)

Strengths and Weaknesses

- Limitations should be noted (often in a paragraph toward the end of the Discussion)
- Where possible, try to counter each potential limitation
 - “Although the diagnosis of asthma was based on medical records review and not confirmed by spirometry, previous studies have shown that a chart diagnosis of asthma has high positive predictive value.”
- Follow limitations with a paragraph noting study strengths
 - Some like to include this early on in Discussion

Organization of Discussion

- **Beginning (1st paragraph)**: answers The Questions and supports the answer with *selected* results
- **Middle**: discuss implications of your findings and relate them to existing literature.
 - Proceed from most to least important topics
 - New/confirmatory/contradictory answers
- **End (last paragraph)**: Restate the answer to the question and importance of the work; future research directions.

Ways not to Begin the Discussion

- Second Introduction
 - Confusing, distracting, wasted opportunity
- Summary of Results
 - While you do need to support your answer with selected results, the focus should be on how the results answered The Question
 - Keep results in Results
- Secondary Information
 - Stay focused on the main message

Length

- No longer than necessary to state, support, explain and defend the answers to the questions
- More noise leads to less message
- Avoid unnecessary detail, words, side issues

SMART Trial

Organization of Discussion

1. Explanation for early termination
2. Summary of primary end point analysis (The Answer)
3. Findings in Caucasians
4. Asthma-related outcomes in Blacks and possible reasons
5. All-cause outcomes in Blacks
6. ICS data consistent with previous studies
7. Asthma-related mortality in salmeterol group lower than previously reported by some others
8. Comparison with findings from other (non RCT) studies
9. Discussion of why imbalance seems to be limited just to 1998 data
10. Summary...reasons for increased risk in Blacks unknown
 - Pretty much a repeat of 2nd para

SMART Trial

Discussion (2nd para)

The Question: does salmeterol result in increased composite outcome of respiratory-related deaths or life threatening events?

The Answer: “no sig differences between treatments for the total population”

But: sig differences in (1) resp deaths, (2) asthma deaths, and (3) asthma deaths/life threatening events

SMART Trial

Discussion (last para)

- Almost verbatim repeat of The Answer
- Imbalance occurred almost entirely in Blacks
- Reasons for possible differential effect in Blacks is unknown

SMART Trial

Discussion (what's not said)

- Trial was stopped early by GSK even though “predefined criteria for termination were not met”
- Could lack of significance of primary outcome analysis be due to resulting lack of statistical power?
- What should be advice to clinicians?
 - If it's okay to treat Blacks, then why stop the trial?

Vaccine Safety Study

Organization of Discussion

1. The Answer
2. Findings “fail to confirm” those of an early study that suffered from methodological limitations
3. Comparison of overall survey rates with the literature (are they believable?)
4. Summary of recent CDC study with mixed results to cite methodological challenges
5. Benefit of large, simple clinical trials; results of recent meta analysis; and discussion of potential limitations
6. Summary: repeats The Answer and gives Public Health recommendations to use vaccine in patients with asthma

Vaccine Safety Study Discussion (1st para)

The Question: is inactivated influenza vaccine safe to use in patients with asthma?

The Answer: “The main finding of this controlled study is that influenza vaccination does not worsen asthma.”

- “should be reassuring to patients and physicians”
- “current guidelines ... are safe”

Air Quality Study

Organization of Discussion

1. The Answer
2. Limited power as possible explanation for differences in sig across databases used
3. Discussion of potential major limitation and why it is likely not an issue
4. Speculation regarding most likely air quality factor affecting morbidity
5. Analytic challenges in sorting out relative effects of different pollutants
6. Did local effects cause changes in air quality? Yes
7. Other indirect evidence to support this assertion
8. Discussion of traffic pattern data
9. How science of ozone formation helps explain findings
10. Relating ozone-hcu findings to broader literature on this topic
11. Potential limitations
12. Summary ... restatement of The Answer

Air Quality Study

Discussion (1st para)

The Question: never really stated precisely, but essentially impact of traffic changes on air quality and acute asthma hcu in children

The Answer: “Our results support previous findings [of ozone-hcu link] and also indicate that reductions in ozone and PM10 ... can reduce asthma morbidity in children. Furthermore, ... decreasing auto emissions [prevents a substantial number of asthma exacerbations].”

Makes you work for it, though!

Air Quality Study

Discussion (last paragraph)

“We conclude that the alternative transportation plan in Atlanta during the Olympic Games reduced ozone and other air pollutants and was associated with a significant, albeit temporary, decrease in the burden of asthma among Atlanta’s children.”

A much more concise statement!