

# Critically reading epidemiologic studies

Dr Mustafa Sagri  
Zawia medical college  
Community medicine department

# Outline

Reading and writing

Objectives, focus

Epidemiologic literacy

Steps in reading

Organization of a journal article

Application to an epidemiologic study

# Reading and writing

Various guides and books on critically reading epidemiologic studies

Better reader  $\longleftrightarrow$  better writer

# Objectives, focus

Read/critique according to your objectives

- Quick assessment of a reference
- Systematic review of literature
- Deep reading of an important article
- Dissecting a study (e.g., exam article)

A full evaluation requires considerable subject matter knowledge.

# Epidemiologic literacy

The expectation for this course

1. Understand concepts, methods, and basic knowledge we've covered
2. Ability to extend that through reading
3. Reason and apply logic about concepts, methods, and basic knowledge
4. Differentiate based on importance

# Steps in reading

Expect to read article more than once  
(quickly, slowly, on exercise bicycle)

Read for big picture, read for details

Look up references

Try calculations

Be prepared for irregularities

Obtain consultation (except for an exam)

# Organization of a journal article

Abstract – all that most people will see

Introduction – why read this article

Methods – what was done

Results – what was found

Discussion – what it means

References – the foundation for the study

Tables and figures – ideally stand on own

# Application to an epidemiologic study

Study objective:

- Describe and measure?
- Examine associations?
- Test hypotheses?

Rationale is central

Critique is keyed to these elements



# Questions for final paper critique - 1

1. Research objective and study rationale
2. Study design and study population
3. Key variables, measures, and data collection modes
4. Study conduct and quality control
5. Data analysis

# Questions for final paper critique - 2

6. Findings

7. Potential concerns

8. Linkage with previous knowledge

9. Conclusions, implications, recommendations

10. Overview of strengths and weaknesses

# Grading guidelines

- Graders will consider accuracy, understanding of epidemiologic concepts relevant to the article, appropriate use of epidemiologic terminology, and evidence of critical thinking and judgment.

# Mechanics

- Write well-constructed paragraph(s), with complete, grammatically correct sentences, in logical sequence, appropriate transitions and good diction
- Use an outline for your answer
- Proof carefully; use a spellchecker!

# 1. Research objective, study rationale

- What is the primary research objective?
- What is the rationale for this objective?
- How strong and well presented (e.g., conceptual framework, supporting evidence, logic) is the rationale in terms of:
  - public health importance
  - contribution to knowledge
- How well-grounded is the rationale in the published literature (biological, epidemiological)?

## 2. Study design and study population

- Identify important design features
- Compared to other choices, what are the advantages and disadvantages for the specific objective(s) of this study?
- What is the study population?
- What are major eligibility criteria?
- How suited is study population, including eligibility criteria, for the objectives?

# 3. Key variables, measures, and data collection modes

- What are the key variables and their roles?
- How are the variables defined & measured?
- What are the major modes by which data were collected?
- How suited are the variables, their definitions, their measurement methods, and the data collection modes for the objectives and rationale of this study?

## 4. . Study conduct and quality control

- How has study population been recruited?
- What steps to minimize non-participation and selective factors in recruitment and retention?
- How successful, overall, was the data collection?
- What steps were taken to improve and document accuracy of data collected?



# 5. Data analysis

- Primary data analysis strategies used?
- How are the primary variables coded?
- Primary statistical parameters estimated?
- How well suited is the choice of these parameters?
- How many participants in the primary analyses?
- How well do the authors deal with issues of multicausation?

# 6. Findings

- What are the main findings?
- Which are most important?
- How well have the authors presented them?
- Should additional results or analyses been reported or data shown?
- Are extraneous results presented?

# 7. Potential concerns

- Accounting for all prospective members of the study population
- Does study population reflect the target population well?
- Major threats to validity important for interpreting the findings?
- How well did the authors discuss these threats to validity?

# 8. Linkage with previous knowledge

- Comparisons to findings from other relevant studies and discussion of reasons for differences?
- Evaluate the evidence concerning the study objective, possible biological mechanisms and other criteria for causal inference
- How relevant and responsive to the study rationale was this discussion?
- In what ways, if any, have the authors advanced previous knowledge?

# 9. Conclusions, implications, recommendations

- What are the primary conclusions? Clear?
- How well supported by findings & discussion?
- How directly do they relate to the objective and rationale?
- How well did authors address implications and/or give insightful recommendations for next steps.

# 10. Strengths and weaknesses

- Key strengths in regard to study objective(s)?
- Take advantage of new methodology?
- Do these advance the field? How?
- Key limitations in regard to objective(s)?
- Are limitations shared by other studies?
- What would be needed to overcome limitations?

# The last word

Subject: =?ks\_c\_5601-1987?B?KLGksO0  
pwve+yMDHILTjueizv7v1LCDE+8T7x9Egs7  
+79S4uLj8/P0A=?=

(±α°í)Â÷¾ÈÀÇ ´ã¹è³¿»õ, ÄûÄûÇÑ ³¿»õ...??@

¾È³çÇİ¼¼¿ä victor\_schoenbach@unc.edu ´Ô!!!

¹æÇâÁ| ¶§¹®¿; , Ó, ®°; ¾ÆÇÁ½ÃÁò...! Àì, °ô Çİ½Ã, é µË´Ï´Ù.

, ðµç ³¿»õ ¾ÇÃëÁ|° Å Àü¹®.....

Ãµ¿¬¿ø·á Á|Ç°À, ·Î ÀÎÃ¼ Àü¿¬¹«ÇØÇİ°í ÀÚ¿¬ Ä£ÈÀûÀÎ Á|Ç°À, ·Î  
µÎÃëÀ» À¹ßÇİÁö

## Thank u