Critical Appraisal of Research Papers/Reports

Introduction to Statistics Course
Feb 25th, 2016
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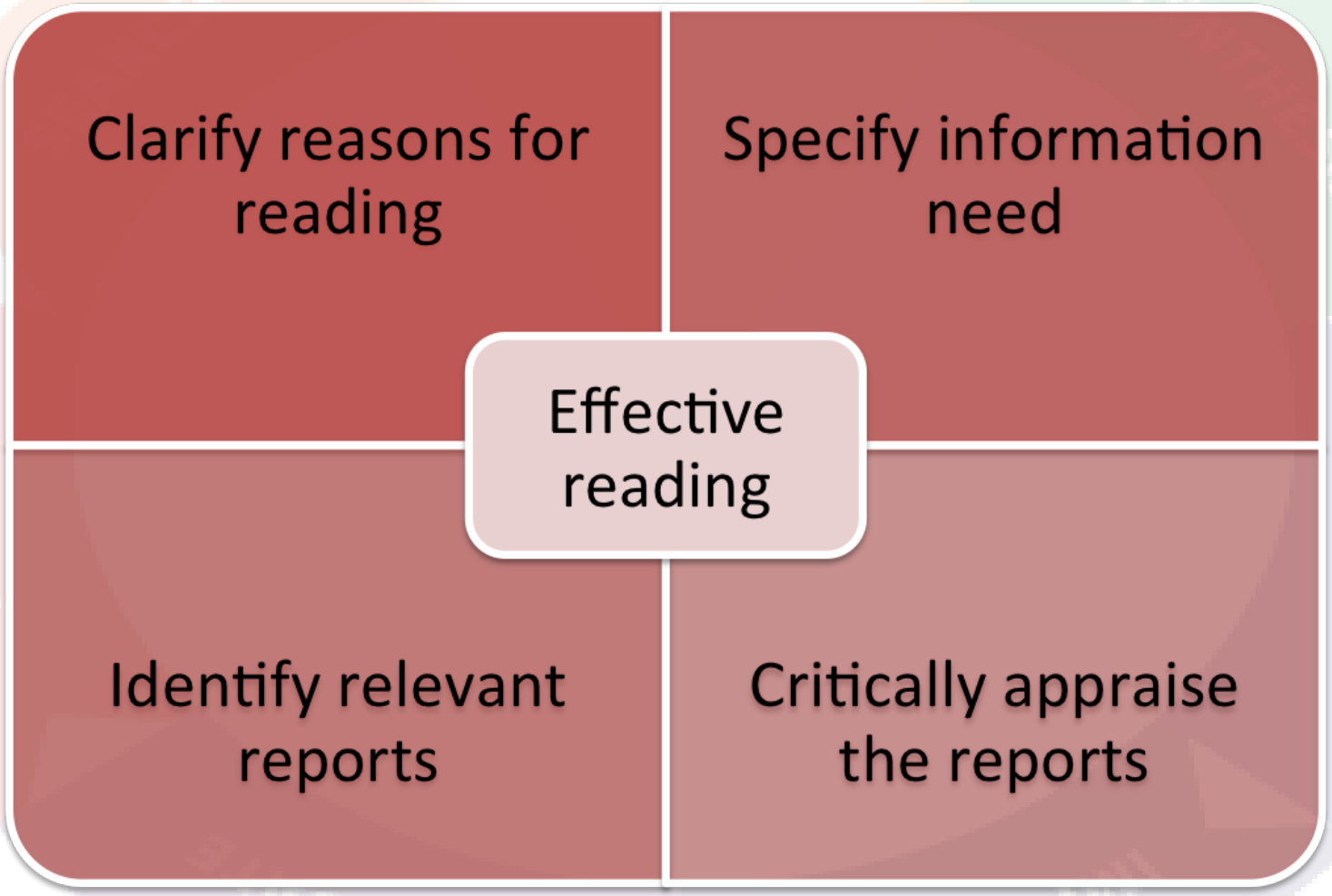
Objectives

1. Effective Reading and Assessing Flaws
2. Standard appraisal questions
3. Questions specific to the study designs
4. Group work/review exercise (4 papers)
5. Summary/questions

Steps for effective reading



Questions to ask when reading a paper

1. Is it of interest?
2. Why was it done?
3. How was it done?
4. What has it found?
5. What are the implications?
6. What else is of interest?

Appraising Cross-sectional Studies

1. Is the design appropriate for the stated objectives?
2. Who was studied?
3. How was the sample obtained?
4. What was the response rate?
5. How could selection bias arise?
6. Were the findings chance?
7. Can the results be generalized?

Appraising Case-control studies

1. Is the design appropriate for the stated aims?
2. How were the cases obtained?
3. Is the control group appropriate?
4. Data collected same way for cases and controls?
5. Where are the biases?
6. Could there be confounding?

Appraising Cohort Studies

1. Is the design appropriate for the stated objectives?
2. Who exactly has been studied?
3. Was a control group used? Should one have been used?
4. How adequate was the follow up?
5. Is the design appropriate to the stated aims?
6. Was exposure/intervention accurately measured?
7. Did analysis allow for the passage of time?
8. What else might influence the outcome?

Appraising Clinical Trials

1. Is the design appropriate for the stated objectives?
2. Were treatments randomly allocated?
3. Were all the patients accounted for?
4. Were outcome assessments blind?
5. How was randomization carried out?
6. Treatment groups comparable at baseline?
7. Protocol deviations reported?
8. Results analysed by intention to treat?

Additional resources

1. STrengthening the Reporting of OBservational studies in Epidemiology (STROBE)
2. Consolidated Standards of Reporting Trials (CONSORT)
3. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

Summary

1. Different study designs attract different checklists
2. There are a number of structured checklists that you can use to aid your appraisal
3. Also use your wider knowledge of conceptual, methodological and practical issues in epidemiological research to inform your evaluation.

Appraisal tasks (Group work)

Cross-sectional study paper for review

Neal KR, Hebden J, Spiller R. *Prevalence of gastrointestinal symptoms six months after bacterial gastroenteritis and risk factors for development of the irritable bowel syndrome: postal survey of patients.* British Medical Journal (1997) 314: 779-782l.

Cohort study paper for review

Rosenblatt et al. *Oral contraceptives and the risk of all cancers combined and site-specific cancers in Shanghai*. Cancer Causes Control. 2009 February ; 20(1): 27–34

Appraisal tasks (Group work)

Clinical trial paper for review

M Svendsen, R Blomhoff, I Holme and S Tonstad *The effect of an increased intake of vegetables and fruit on weight loss, blood pressure and antioxidant defense in subjects with sleep related breathing disorders*. European Journal of Clinical Nutrition (2007) 61, 1301–1311

Case control study paper for review

Comba P, Barbieri PG, Battista G et al. *Cancer of the nose and paranasal sinuses in the metal industry: A case-control study*. British Journal of Industrial Medicine (1992) 49: 193-196.