

Assessing the Quality of Research

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Aims

- Overview of how we assess the quality of research

Objectives

- Look at sources of evidence and the importance of identifying the strengths and weaknesses of research methods
- Discuss key considerations when appraising quantitative and qualitative research
- Introduce tools that assist us in critically appraising research
- Practical – using critical frameworks



Critical Appraisal

How do we carefully and systematically assess the outcome of scientific research (evidence) to judge its trustworthiness, value, and relevance?

Sources - Evaluation - Currency



Sources

So, let's consider these sources of information – in your groups order these in terms of what you feel are the most Valid, Reliable and Trustworthy.

- Newspaper article
- Peer reviewed journal paper
- Wikipedia Article
- Paper in University Repository
- BBC/CNN News programme
- Government Report
- Youtube Video
- Corporate website
- Tabloid Article
- Academics Blog
- University Website
- Activists Report



Journal

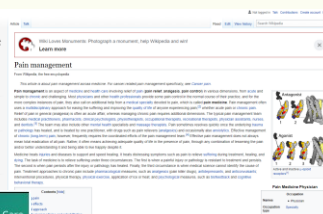
- Peer Review
- Repositories

Reports / Wikipedia / Corporate

- Editorial Control
- Expert Panel

Blogs / Youtube

- Review process?



ORIGINAL ARTICLE

Residence time and food contact time effects on transfer of *Salmonella* Typhimurium from tile, wood and carpet: testing the five-second rule

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Keywords

bacterial transfer, cross-contamination, five-second rule, food contact surface, residence time, *Salmonella*

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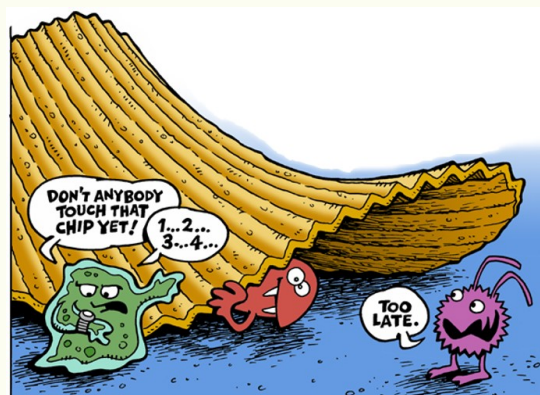
Abstract

Aims: Three experiments were conducted to determine the survival and transfer of *Salmonella* Typhimurium from wood, tile or carpet to bologna (sausage) and bread.

Methods and Results: Experiment 1. After 28 days, 1.5 to 2.5 log₁₀ CFU cm⁻² remained on the tile from and the more concentrated media facilitated the survival of *S.* Typhimurium compared with the more dilute solutions. Experiments 2 and 3. The bacterial transfer rate to food decreased as the bacterial residence time on the surface increased from 2, 4, 8 to 24 h with transfers of 6.5, 4.8, 4.6 and 3.9 log CFU ml⁻¹ in the rinse solutions, respectively. Over 99% of bacterial cells were transferred from the tile to the bologna after 5 s of bologna exposure to tile. Transfer from carpet to bologna was very low (<0.5%) when compared with the transfer from wood and tile (3–48%).

Conclusions: (i) *Salmonella* Typhimurium can survive for up to 4 weeks on dry surfaces in high-enough populations to be transferred to foods and (ii) *S.* Typhimurium can be transferred to the foods tested almost immediately on contact.

Significance and Impact of the Study: This study demonstrated the ability of bacteria to survive and cross-contaminate other foods even after long periods of time on dry surfaces, thus reinforcing the importance of sanitation on food contact to minimize the risk of foodborne illness.



Fast-forward several decades and, now 46, I have two children, both conceived naturally. At a recent scan, I was told I had the ovaries of a much younger woman.



Reflect:

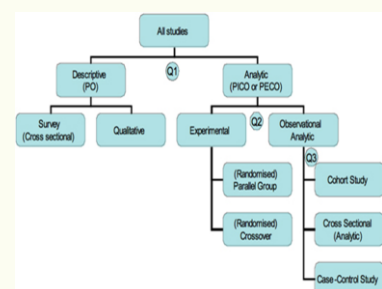
How do you go about making sense of the literature that you read?

Do you have a “system” you use to assess the credibility of the studies you examine?



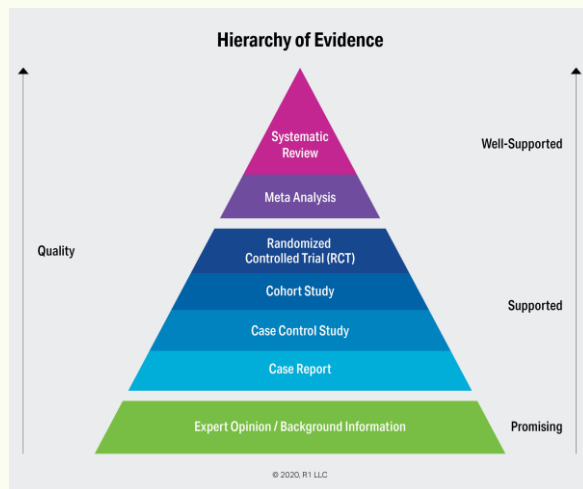
Core Questions

- What is the Research Question
- Does the study address an evidence gap
- Is the study design valid and appropriate
 - Methods / Tools / Sample
- Is the study ethical
- What are the results
- What are the implications



Hierarchy of Evidence

• Quant Designs



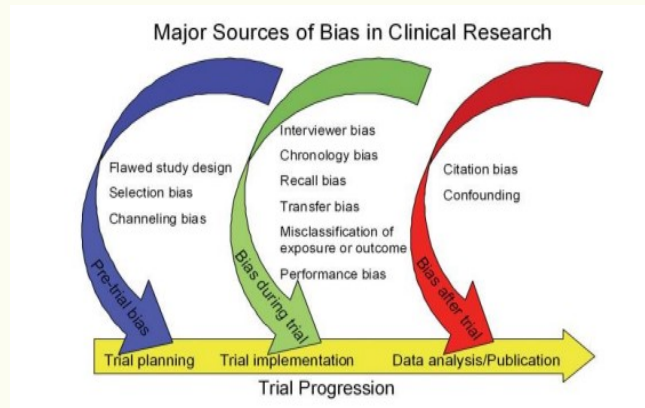
Ethical issues

- Was there a real need to conduct the trial? (Equipoise)
- Was the study approved by an ethics committee?
- Did patients (or carers) give informed consent?
- Was the trial of sufficient size/design to reach a meaningful conclusion?
 - Study Power
 - Saturation
- Was there an independent monitoring committee?
- What role did the funder(s) play?



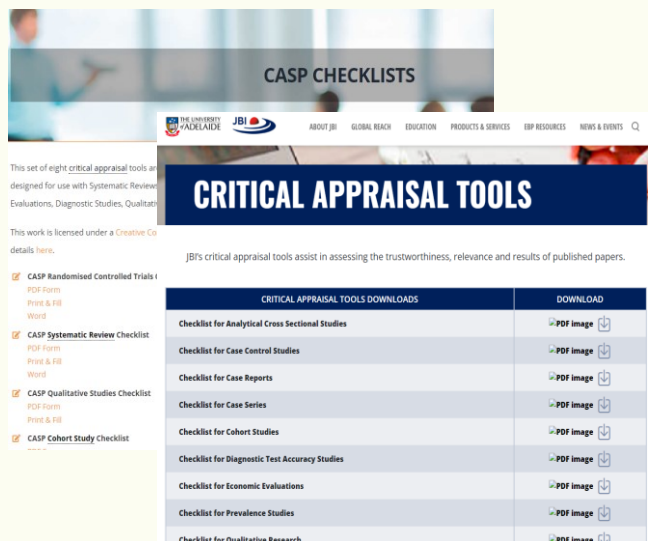
Bias

- Sampling
- Confirmation
- Response/Observer
- Reporting/Sponsor



Resources

- [Critical Appraisal Skills Programme](#)
- [Joanna Briggs Institute CAT](#)



The screenshot shows the Joanna Briggs Institute (JBI) website's 'CRITICAL APPRAISAL TOOLS' section. It includes a navigation bar with links like 'ABOUT JBI', 'GLOBAL REACH', 'EDUCATION', 'PRODUCTS & SERVICES', 'ERP RESOURCES', and 'NEWS & EVENTS'. The main content area lists eight critical appraisal tools, each with a 'DOWNLOAD' button and a 'PDF image' icon. A table below summarizes the available tools and their download options.

CRITICAL APPRAISAL TOOLS DOWNLOADS	DOWNLOAD
Checklist for Analytical Cross Sectional Studies	PDF image
Checklist for Case Control Studies	PDF image
Checklist for Case Reports	PDF image
Checklist for Case Series	PDF image
Checklist for Cohort Studies	PDF image
Checklist for Diagnostic Test Accuracy Studies	PDF image
Checklist for Economic Evaluations	PDF image
Checklist for Prevalence Studies	PDF image
Checklist for Qualitative Research	PDF image

JBICRITICAL APPRAISAL CH QUALITATIVE RESEARCH

Reviewer_____

Author_____

1. Is there congruity between the stated philosophical perspective and the research methodology?
2. Is there congruity between the research method and the research question or objectives?
3. Is there congruity between the research method and the methods used to collect data?
4. Is there congruity between the research method and the representation and analysis of data?
5. Is there congruity between the research method and the interpretation of results?
6. Is there a statement locating the researcher or theoretically?
7. Is the influence of the researcher on the research vice-versa, addressed?
8. Are participants, and their voices, represented?
9. Is the research ethical according to current standards for recent studies, and is there evidence of approval by an appropriate body?
10. Do the conclusions drawn in the research result from the analysis, or interpretation, of the data?

Overall appraisal: Include ☐ Exclude ☐

Comments (including reason for exclusion)

Paper for appraisal and reference:

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

Yes ☐
 Can't Tell ☐
 No ☐

HINT: Consider
 • what was the goal of the research
 • why it was thought important
 • its relevance

Comments:

2. Is a qualitative methodology appropriate?

Yes ☐
 Can't Tell ☐
 No ☐

HINT: Consider
 • If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
 • Is qualitative research the right methodology for addressing the research goal

Comments:

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

Yes ☐
 Can't Tell ☐
 No ☐

HINT: Consider
 • if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

THANK YOU

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