Evidence-Based Practice in Dietetics

COURSE CHAPTER: 3

References

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4. Gray, G. (2002) Evidence-based medicine: applications in dietetic practice. Journal of the American Dietetics Association.
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“I believe success in that area […] and the survival of our profession depends substantially on how well and how quickly we adopt the evidence-based approach to practice.”

- Connie Diekman

Evidence-Based Practice Introduction

Medical practice, including dietetics, relied on tradition, authority, and standard approaches.

Example: Using the Sippy Diet with peptic ulcer patients.

The shift in practice occurred in 1992 when an article, published in the Journal of the American Medical Association called for teaching evidence-based medicine.

Scenario

A junior medical resident working in a teaching hospital admits a 43-year-old previously well man who experienced a witnessed grand mal seizure. He had never had a seizure before and had not had any recent head trauma. He drank alcohol once or twice a week and had not had alcohol on the day of the seizure. Findings on physical examination are normal. The patient is given a loading dose of phenytoin intravenously and the drug is continued orally. A computed tomographic head scan is completely normal. The patient is very concerned about his risk of seizure recurrence. How might the resident proceed?

Evidence-Based Medicine Working Group (1992). Evidence-Based Medicine. JAMA, 268(17), p.2420.

The way of the past

Faced with this situation as a clinical clerk, the resident was told by her senior resident (who was supported in his view by the attending physician) that the risk of seizure recurrence is high (though he could not put an exact number on it) and that was the information that should be conveyed to the patient. She now follows this path, emphasizing to the patient not to drive, to continue his medication, and to see his family physician in follow-up. The patient leaves in a state of vague trepidation about his risk of subsequent seizure.

Evidence-Based Medicine Working Group (1992). Evidence-Based Medicine. JAMA, 268(17), p.2420.

The way of the future

The resident asks herself whether she knows the prognosis of a first seizure and realizes she does not. She proceeds to the library and, using the Grateful Med program, conducts a computerized literature search. She enters the terms epilepsy, prognosis, and recurrence, and the program retrieves 25 relevant articles. Surveying the titles, one appears directly relevant. She reviews the paper, finds that it meets criteria she has previously learned for a valid investigation of prognosis, and determines that the results are applicable to her patient. The search costs the resident $2.68, and the entire process took half an hour. The results of the relevant study show that the patient risk of recurrence at 1 year is between 43% and 51%, and at 3 years the risk is between 51% and 60%. After a seizure-free period of 18 months his risk of recurrence would likely be less than 20%. She conveys this information to the patient, along with a recommendation that he take his medication, see his family doctor regularly, and have a review of his need for medication if he remains seizure-free for 18 months. The patient leaves with a clear idea of his likely prognosis.

Evidence-Based Medicine Working Group (1992). Evidence-Based Medicine. JAMA, 268(17), p.2420.

Evidence-Based Practice

Evidence-Based Practice Definition

- EBP: “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research”

- In 2000, the Evidence-Based Medicine Working Group, expanded the principles of EBM to include a patient’s values and preferences.

- One example of considering a patient’s wishes when determining nutritional care would be respecting that a patient with diabetes and a terminal disease may desire no further medical treatment. EBM, therefore, is “the integration of best research evidence with clinical expertise and patient values.”

What influenced the growth of EBP?

1. Rapid growth of clinical studies & literature

2. Availability of high-quality systematic reviews

3. Advances in health information technology

4. Support of EBP to both patient care and cost control.

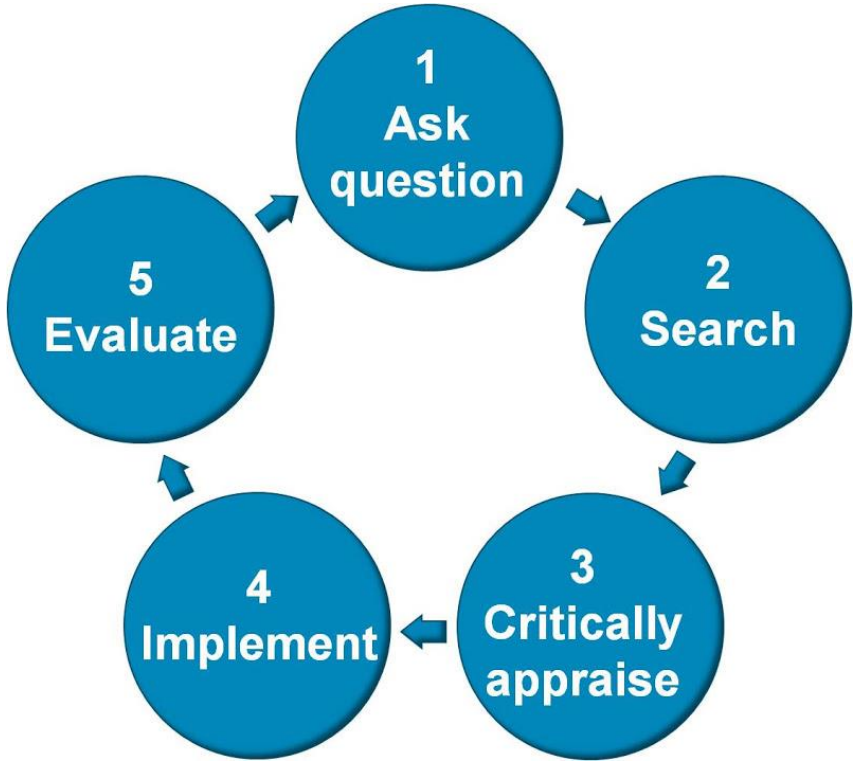
Reference 1

Type of Evidence

www.guides.mclibrary.duke.edu

EBP Steps

1. Express the information needed in an "answerable" format
2. Search for and retrieve the best evidence;
3. Critically appraise the evidence
4. Apply the evidence to the clinical situation
5. Improve evidence-based practice via self-reflection.



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1. ASK

Anatomy of a good clinical question (PICO)

P: Patient/Problem:

I: Intervention/Exposure:

C: Comparison:

O: Outcome:

Reference 1+2

Why are “PICO” questions important?

Formulating focused questions is essential in EBP to guide us in searching the literature.

A well-built PICO question increases our chances of finding the best evidence to inform our practice quickly and efficiently.

Questions can be related to:

- Prevention
- Etiology
- Treatment
- Intervention

PICO Question formats

- **Prevention/Etiology**

Are _____ (P) who have_____ (I) compared with those without / low__ (C) at ____ risk for _____ (O)

- **Treatment/Intervention**

In _____ (P) how does _____ (I) compared with _____(C) affect _____ (O)

Case 1

The patient is a 65 year old male with a long history of *type 2 diabetes* and *obesity*. Otherwise his medical history is unremarkable. He *does not smoke*. He had *knee surgery* 10 years ago but otherwise has had no other major medical problems. Over the years he has *tried numerous diets and exercise programs* to reduce his weight but has not been very successful. His granddaughter just started high school and he wants to see her graduate and go on to college. He understands that his diabetes puts him at a high risk for heart disease and is frustrated that he cannot lose the necessary weight. His neighbor told him about a colleague at work who had a bariatric surgery and as a result not only lost over 100 lbs. but also "cured" his diabetes. He wants to know if this procedure really works.

Answer

Patient Problem	**obese, diabetes type 2, male**
Intervention	**gastric bypass surgery; bariatric surgery**
Comparison	**standard medical care**
Outcome	**remission of diabetes; weight loss; mortality**

In patients with type 2 diabetes and obesity, is bariatric surgery more effective than standard medical therapy at increasing the probability of remission of diabetes?

Reference 2

Case 2

A medical resident refers a patient with mild hypertension to you for dietary counseling regarding a reduced sodium diet. When making the referral, the resident tells you that she usually has patients with mild hypertension try a low-sodium diet before treating with antihypertensive medications. She asks how effective this is?

P: Patients with hypertension
I: Nutritional counseling regarding low-sodium diet
C: No dietary advice
O: sustained fall in blood pressure

Question: In patients with mild hypertension, does nutrition counseling regarding a low sodium diet compared with no dietary advice lead to a sustained fall in blood pressure?

Case 3

A 27-year-old presented for her initial prenatal visit at 10 weeks' gestation. Her family and medical histories were unremarkable and she reported healthy behaviours. Her BMI was 22. She has been vegan for the previous 5 years. Her initial prenatal labs revealed mild anemia (hematocrit, 32%; hemoglobin, 10.8 g/dL). She was asked to bring a 3-day diet history so that her food choices could be evaluated. Evaluation of her diet revealed a deficiency of iron-rich foods and insufficient intake of foods high in folate. You discussed iron supplementation with the patient and she expressed concern over the impact on the health of the baby.

Case 3

P: 27 year old female with prenatal anaemia I: Iron supplementation C: No iron supplementation O: Adverse pregnancy outcomes

Possible PICO 2 P: 27 year old female with prenatal anaemia I: Diet modification to include iron enriched vegetarian foods C: No diet modification O: Improvement in haemoglobin concentration

Possible PICO 3 P: 27 year old female with prenatal anaemia I: Iron supplementation C: Diet modification to include iron enriched vegetarian foods O: Adverse pregnancy outcomes

Possible PICO 4 P: 27 year old female with prenatal anaemia I: Iron supplementation C: Diet modification to include iron enriched vegetarian foods O: Improvement in haemoglobin concentration

Question: For a patient with prenatal anemia, does iron supplementation increase the risk of adverse pregnancy outcomes?

Case 4

In your community, there is a funding program which you can apply to. The program is aimed towards obese children and objective is to reduce the risk of diabetes mellitus in the future. Previously, your department has conducted educational sessions in several schools on lifestyle changes and healthy eating targeting young children. You read about examples abroad on how they tackle the issue through community intervention, and one example that comes up is setting up recreational activities in public spaces for community members to use. As you can only apply for one project, a question comes up on which program is most effective in reducing diabetes mellitus risk.

2. Acquire

- This step includes searching and retrieving the best evidence

1. From the PICO question, identify your search terms

Case 1

Question: **In patients with type 2 diabetes and obesity, is bariatric surgery more effective than standard medical therapy at increasing the probability of remission of diabetes?**

Search terms:

- Obesity
- Type 2 diabetes
- Bariatric Surgery

2. Acquire

2. Add connectors to the search term

- AND: includes the presence of all search terms
- OR: when either search term is desired.
- NOT: exclude a term

❖ Search: Obesity AND Type 2 diabetes AND Bariatric Surgery

2. Acquire

3. Since medical information can quickly become outdated, limit your search to the most recent evidence available.

Where to search?

Various search engines include:

- Google scholar

www.scholar.google.com

- PubMed

https://www.ncbi.nlm.nih.gov/pubmed/

- The Cochrane Library

https://www.cochranelibrary.com/

… and others

What to search for?

Different study designs answer different types of medical questions. For example:

1. **Randomised Controlled Trial (RCT):** Used to answer questions about effects.
2. **Cohort study:** Used to answer questions about etiology or prognosis
3. **Case-control study:** Used to answer questions about etiology, especially for rare conditions where a cohort study would not be feasible.
4. **Cross-sectional study/survey:** Used to answer questions about prevalence and diagnosis.
5. **Qualitative study:** Used to answer questions about why people do what they do and how they feel.

3. Appraise

"the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context"

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1. Are the results valid?
2. What are the results?
   - How large was the effect?
   - How precise was the effect?
3. How can I apply these to patient care?
   - Are the study patients similar to my patients?
   - Were all important outcomes considered?
   - Are benefits worth the potential harms and coats?

4. Apply

- After gathering evidence and having critically appraised it, you must decide whether—and how—to apply the evidence to your clients and their medical problems.
- Utilize the evidence and incorporate your clinical judgment and the client's values and wishes to make a determination of how to apply the evidence to the client's diagnosis and/or treatment
- Consider these questions:
  1. How closely do the findings resemble my patient and his or her problems?
  2. Is the intervention feasible for this patient?
  3. Is the intervention aligned with my patient's values and wishes?

5. Self-evaluation

Evaluating how you performed in the previous steps of the process

1. Were my clinical questions well formulated? (Were they in an answerable format?)
2. Did I select the best sources for the type of clinical questions?
3. Am I searching efficiently and are my searches improving?
4. Am I critically appraising the evidence, and am I integrating that evidence into my practice?
5. Do I have a system for becoming aware of “newly emerging evidence”?

Why you can’t use media articles as references

- Research says your cat might be thinking about killing you
- Drinking coffee may reverse liver damage from alcohol
- Coffee consumption may help prevent colon cancer
- Coffee consumption may raise miscarriage risk
- A new study shows that women are more open to romance when they are full and not hungry
- Red wine and chocolate may lower diabetes risk...but only if you’re a woman
- Chocolate makes you smarter, proves 40-year study

Why you can't use media articles as references

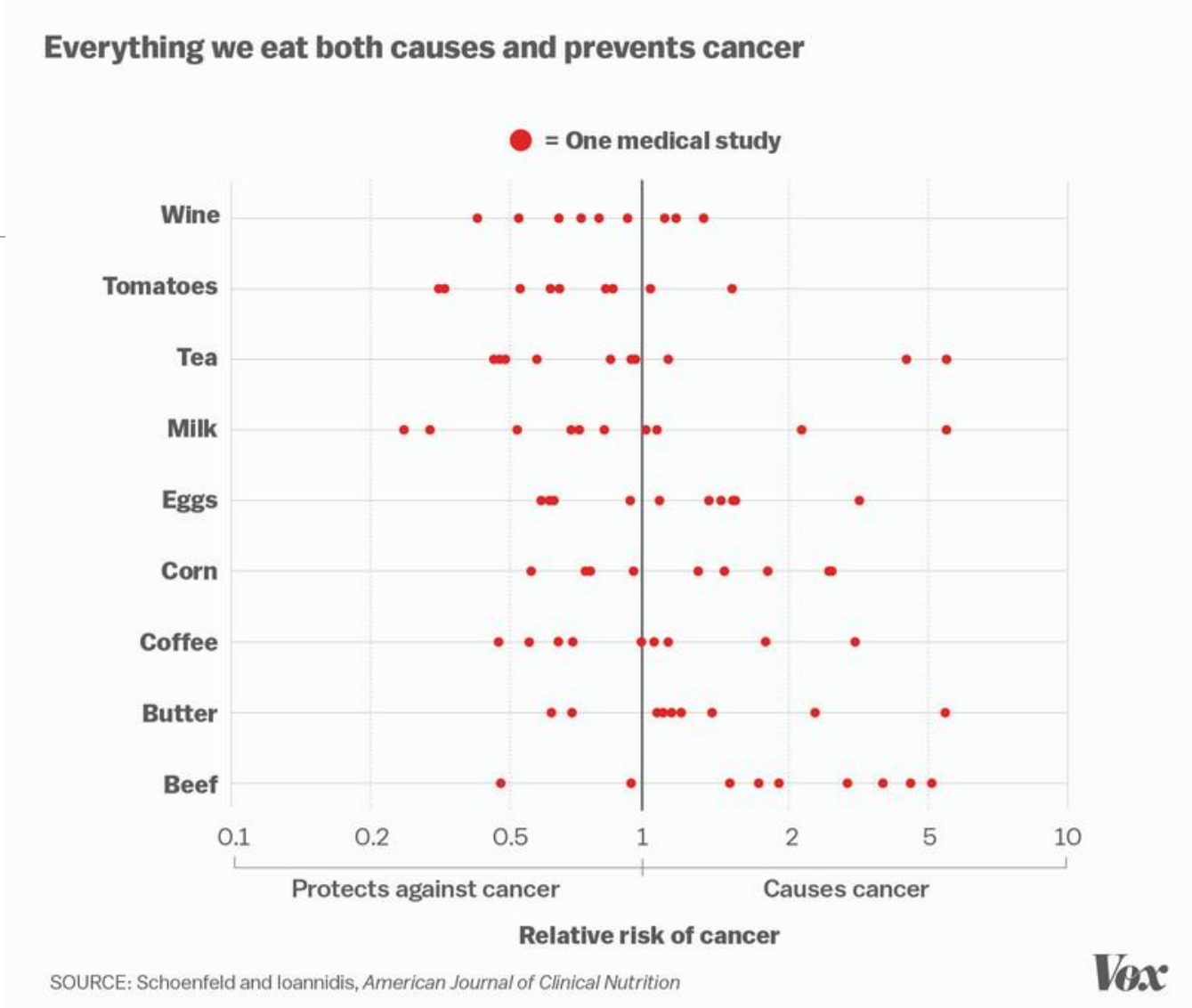
Some reasons may include:

1. The difference in the target of media articles and science articles. While media articles seek simple, accessible and novel headlines, science focuses on the accumulation of knowledge and doubt.

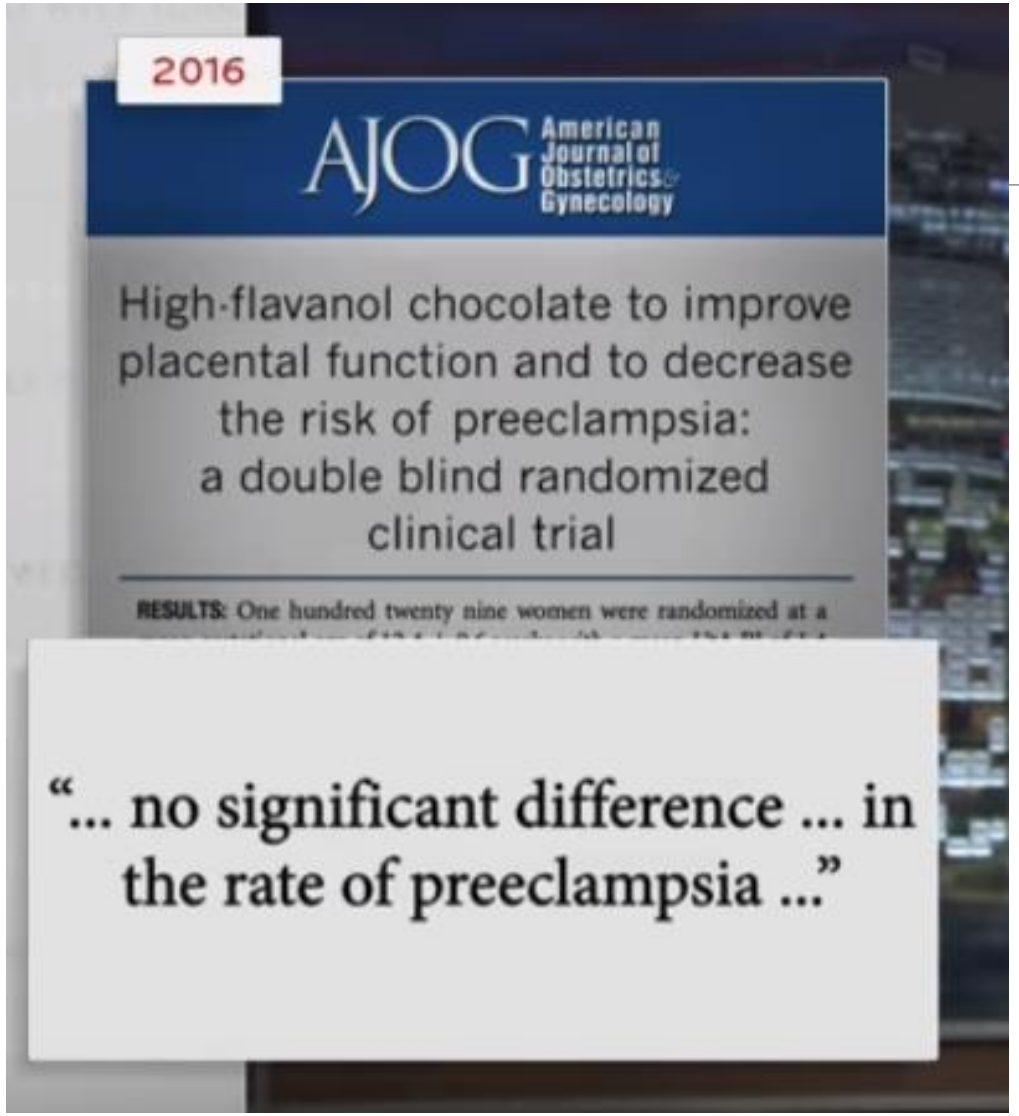
2. Media articles are less likely to put out press releases on meta-reviews than they are on a striking and dramatic single study.

3. The difference in the publishing process. Scientific journal articles must undergo a process called *peer review*, which is a more rigorous process than the editing and fact-checking of media articles.

https://www.visionlearning.com/en/library/Process-of-Science/49/Understanding-Scientific-Journals-and-Articles/158
https://www.vox.com/science-and-health/2017/3/3/14792174/half-scientific-studies-news-are-wrong



https://www.vox.com/science-and-health/2017/3/3/14792174/half-scientific-studies-news-are-wrong


2016
AJOG American Journal of Obstetrics & Gynecology
High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial
RESULTS: One hundred twenty nine women were randomized at a
"... no significant difference ... in the rate of preeclampsia ..."


HEALTHWATCH
Eating moderate amounts of chocolate could benefit mom and baby
5:26 36°
4
WBZ
CBSBoston.com