Using the best scientific evidence to make informed health decisions

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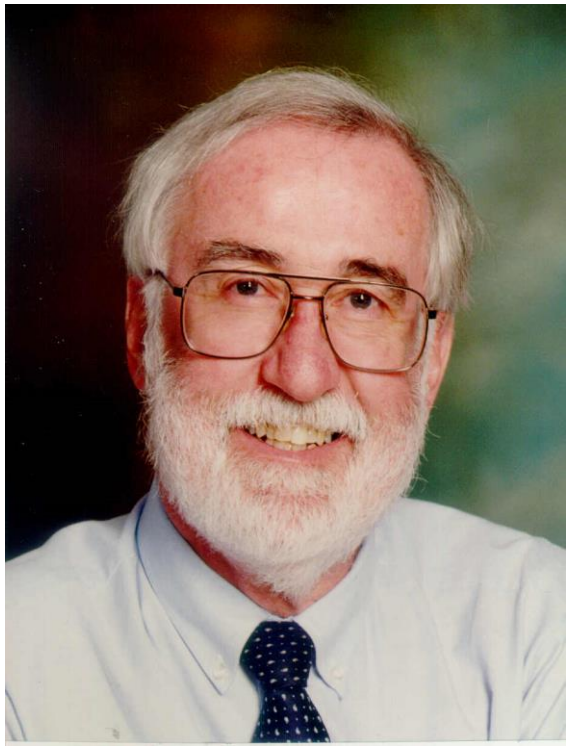
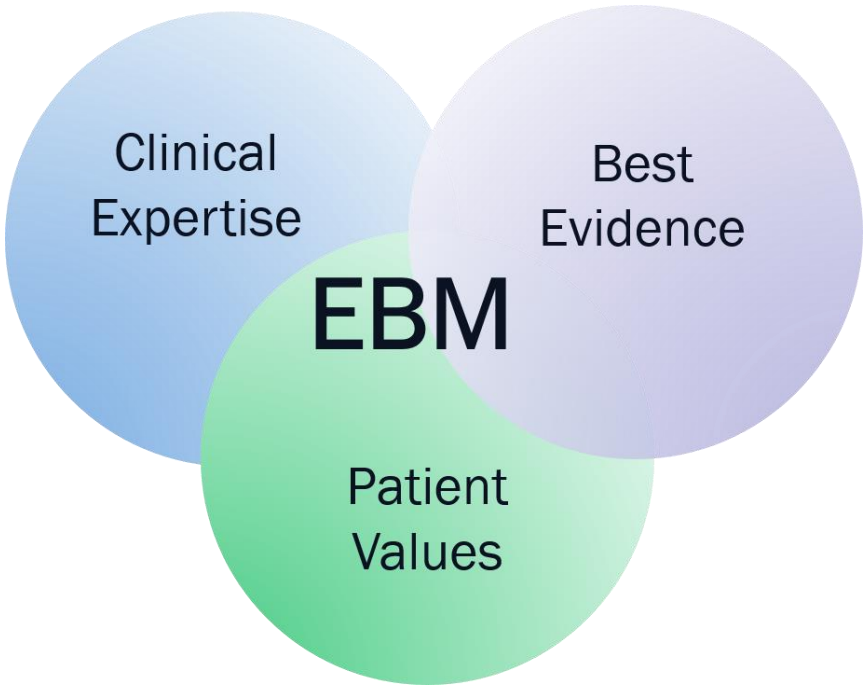
What is Evidence-Based Medicine?

"Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values"



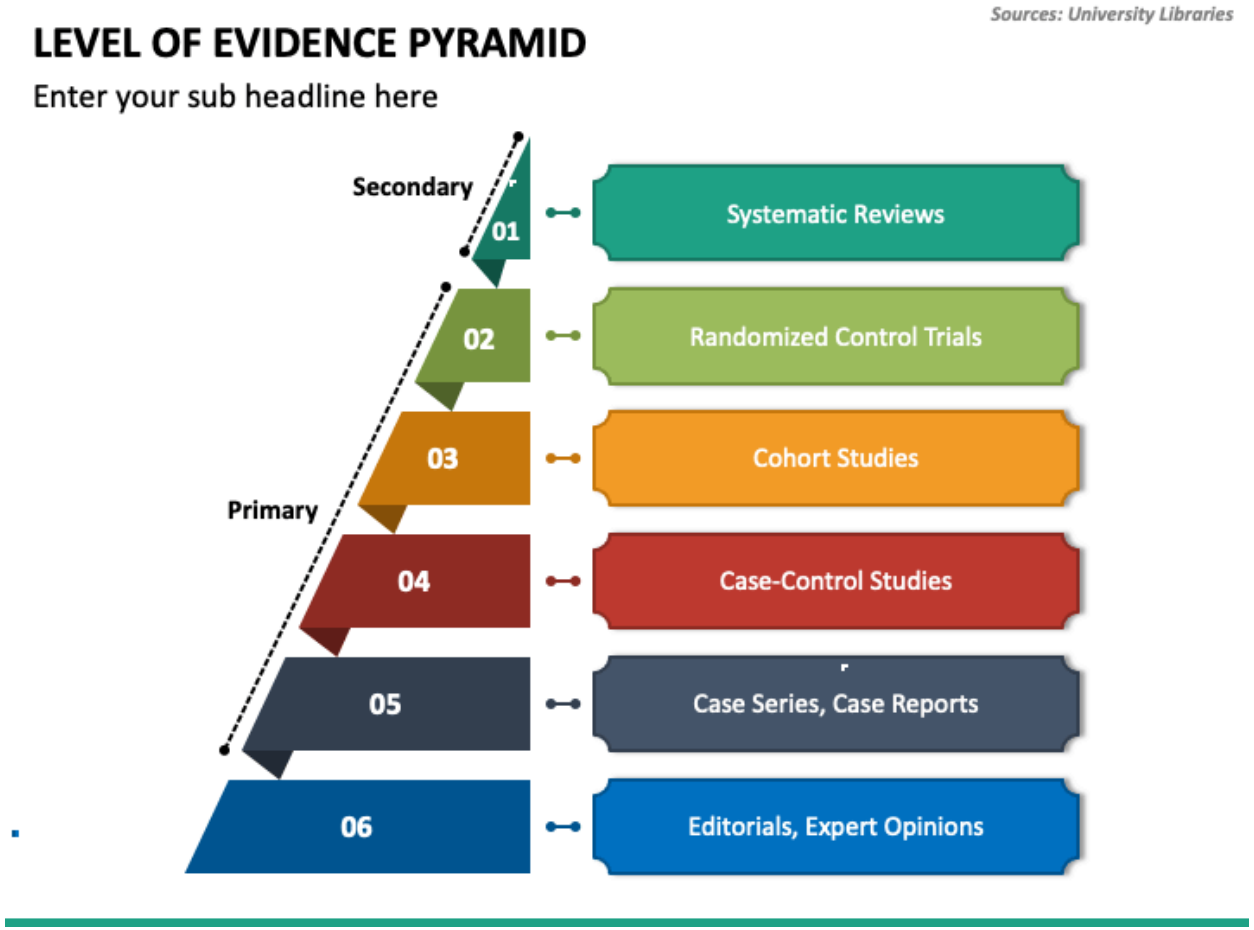
Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS: Evidence based medicine: what it is and what it isn't. BMJ 1996;312:71-2.

Evidence-Based Medicine (EBM) Triad



But, what is the best evidence

- Not all evidence in medicine is the same
- Evidence hierarchy – a pyramid that tells us which evidence we can trust more
- And which evidence we should first look for
- Higher in the hierarchy – less bias



Evidence from research

- The key to look for the best evidence
- Is to look for research evidence – studies that have been conducted and (hopefully) published
- But not all studies are the same
- When looking for research evidence
  - First, we have to find the studies (know where to look for)
  - But also, to have critical appraisal skills
    - To assess their rigor and whether we can trust the study

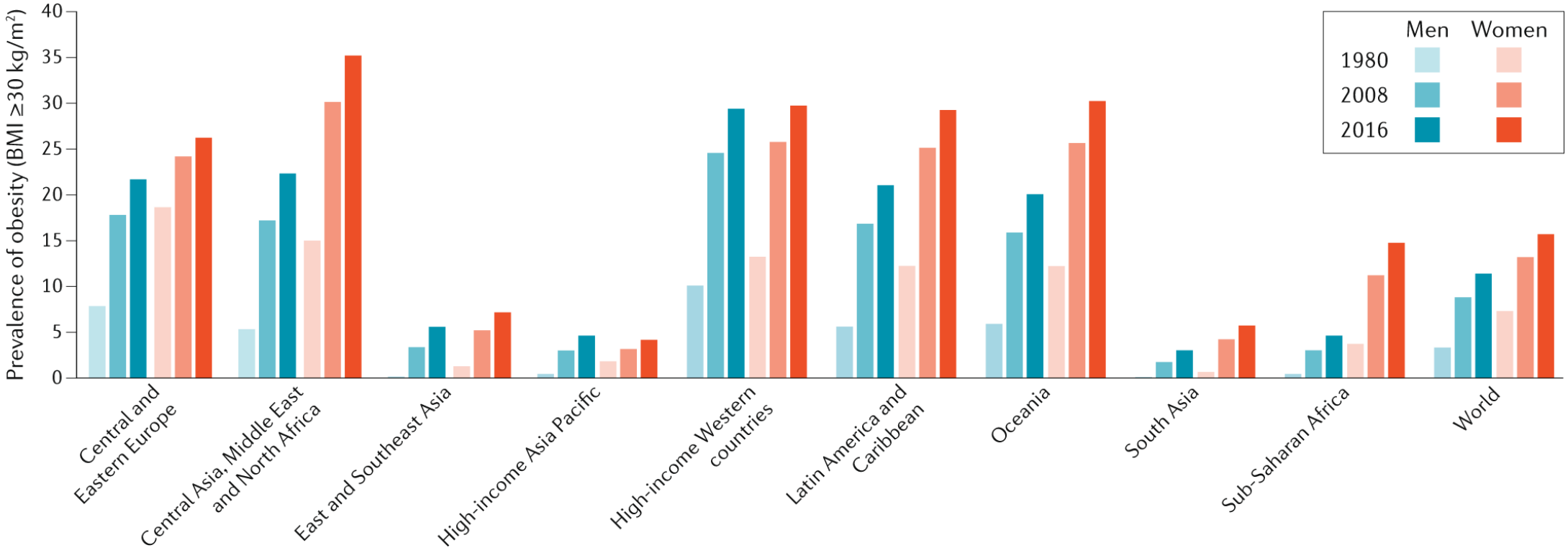
And the most important message: not all evidence is the same

- Beware of anecdotal evidence
  - Somebody has an interesting story? It could be only a story
- Individual case reports in the literature
  - One or few cases? May not be generalizable
- Expert opinion?
  - People are very subjective
  - Confirmation bias – people look for confirmation of what they believe in

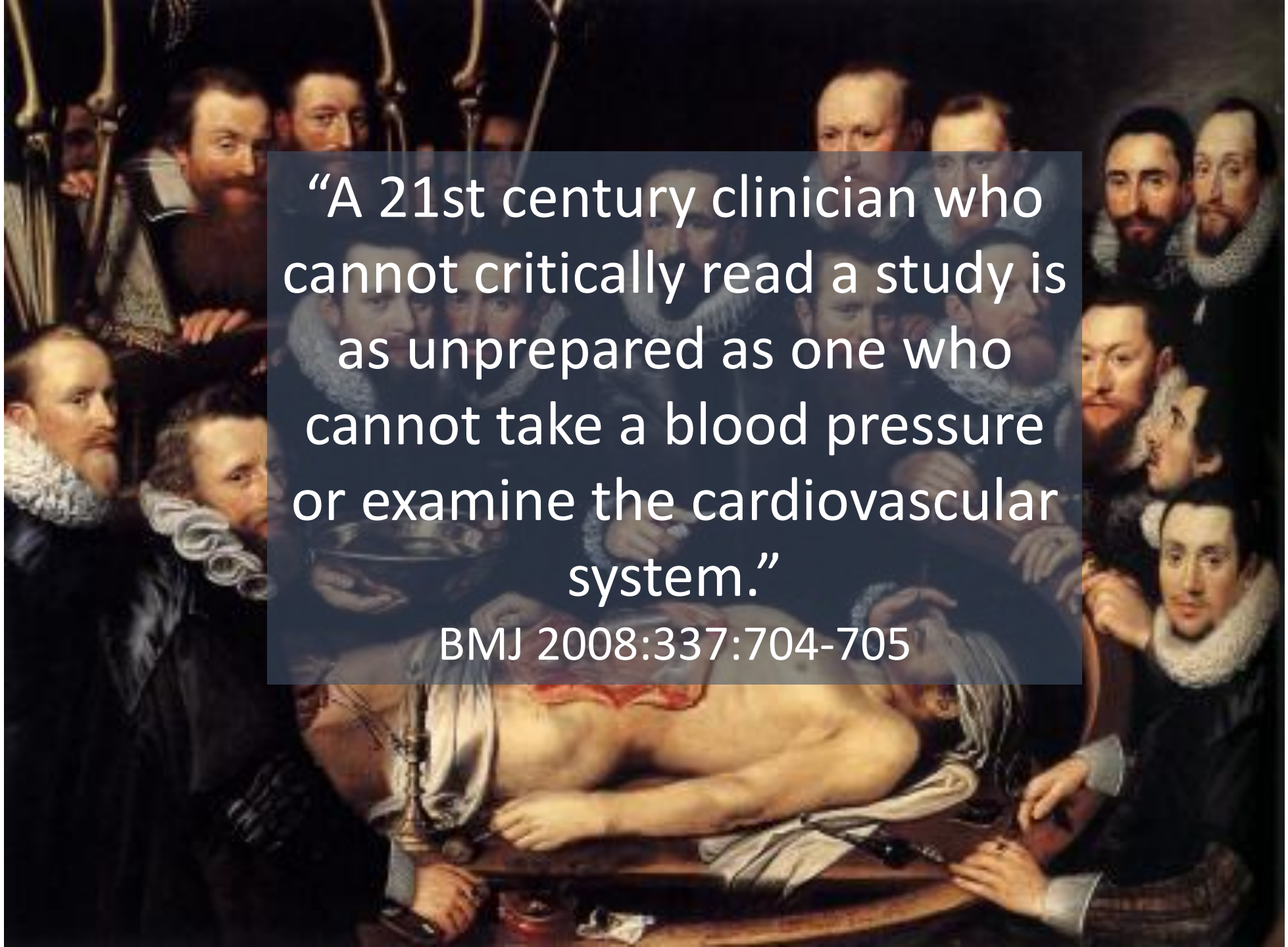
Typical example of „anecdotal evidence”

- Weight-loss photos: before and after
- Myriad such photos in advertisements
  - Despite the miraculous solutions offered, humanity is gaining more and more weight

Global prevalence of obesity

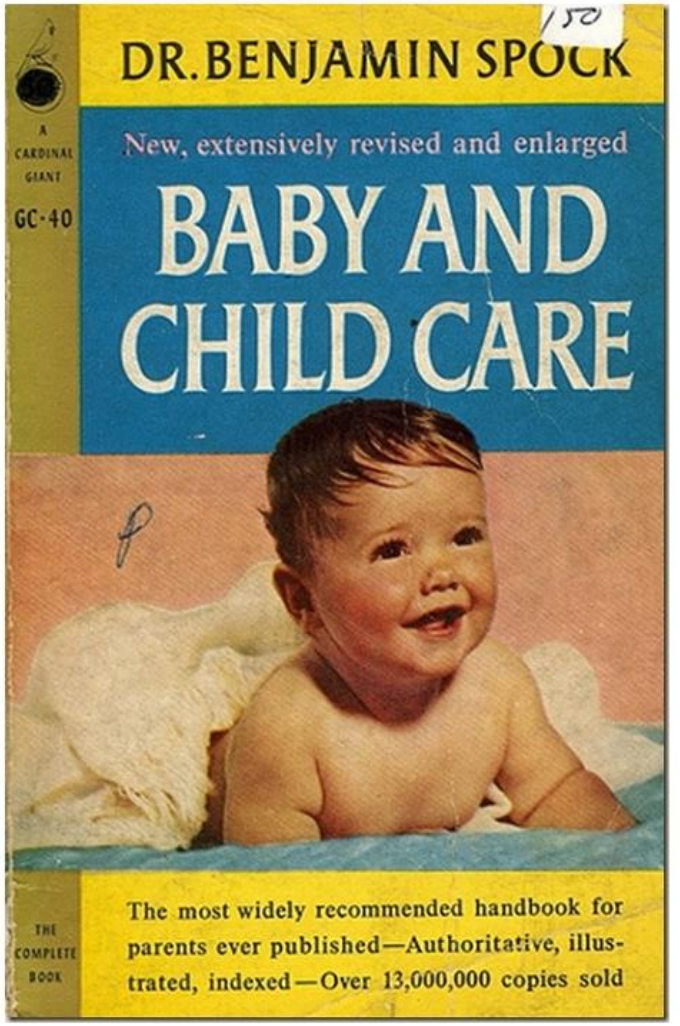


https://www.nature.com/articles/s41574-020-00411-y


“A 21st century clinician who cannot critically read a study is as unprepared as one who cannot take a blood pressure or examine the cardiovascular system.”
BMJ 2008:337:704-705

Advice can also be deadly

- Dr. Benjamin Spock: Baby and Child Care
- 1946-
- Described once as: “second only to the Bible in popularity”
- Advice for sleeping: face down (sleeping on tummy; prone position)
- But we now know that this practice – which was never rigorously evaluated – led to tens of thousands of avoidable cot deaths
- SIDS: Sudden Infant Death Syndrome
- Public health campaign “Back to sleep”



Dr Spock 1956 edition switches recommendation to face down

Back to Sleep campaigns USA

UK

1950 1960 1970 1980 1990 2000 2010

Dr Spock 1946 edition recommends face up

First study suggests harm

Second study suggests harm

Three further studies: two suggest harm

Systematic review published

Int J Epidemiol. 2005 Aug;34(4):874-87. Epub 2005 Apr 20.

Infant sleeping position and the sudden infant death syndrome: systematic review of observational studies and historical review of recommendations from 1940 to 2002.

Gilbert R[1], Salanti G, Harden M, See S.

⊕ Author information

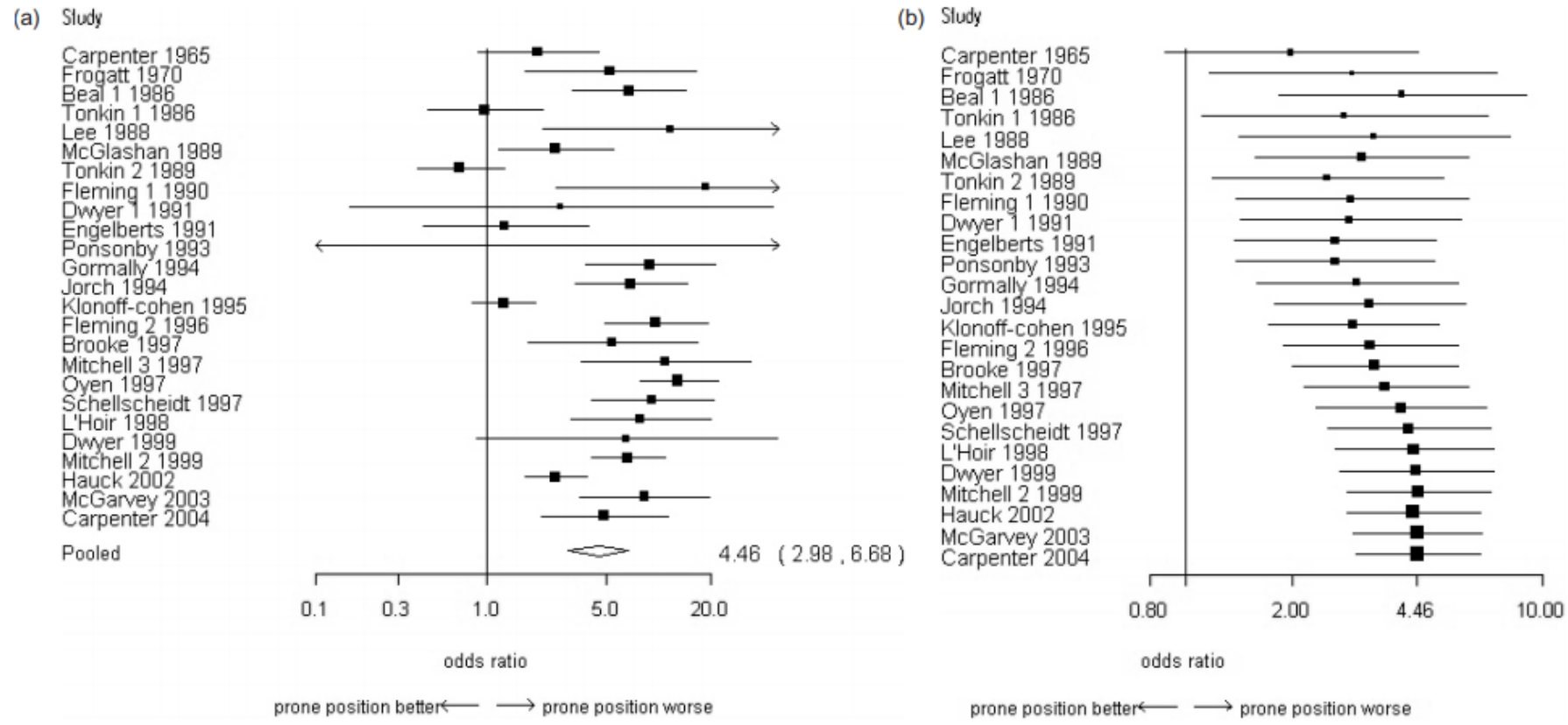
Abstract

BACKGROUND: Before the early 1990s, parents were advised to place infants to sleep on their front contrary to evidence from clinical research.

METHODS: We systematically reviewed associations between infant sleeping positions and sudden infant death syndrome (SIDS), explored sources of heterogeneity, and compared findings with published recommendations.

RESULTS: By 1970, there was a statistically significantly increased risk of SIDS for front sleeping compared with back (pooled odds ratio (OR) 2.93; 95% confidence interval (CI) 1.15, 7.47), and by 1986, for front compared with other positions (five studies, pooled OR 3.00; 1.69-5.31). The OR for front vs the back position was reduced as the prevalence of the front position in controls increased. The pooled OR for studies conducted before advice changed to avoid front sleeping was 2.95 (95% CI 1.69-5.15), and after was 6.91 (4.63-10.32). Sleeping on the front was recommended in books between 1943 and 1988 based on extrapolation from untested theory.

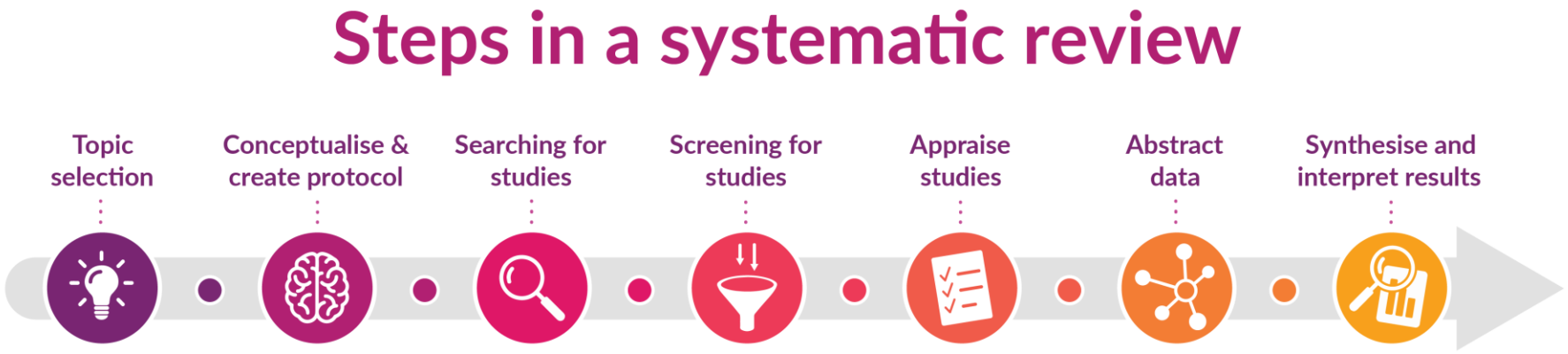
CONCLUSIONS: Advice to put infants to sleep on the front for nearly a half century was contrary to evidence available from 1970 that this was likely to be harmful. Systematic review of preventable risk factors for SIDS from 1970 would have led to earlier recognition of the risks of sleeping on the front and might have prevented over 10 000 infant deaths in the UK and at least 50 000 in Europe, the USA, and Australasia. Attenuation of the observed harm with increased adoption of the front position probably reflects a "healthy adopter" phenomenon in that families at low risk of SIDS were more likely to adhere to prevailing health advice. This phenomenon is likely to be a general problem in the use of observational studies for assessing the safety of health promotion.



- 1970-ih there was sufficient evidence that the prone position is worse

We need evidence synthesis – the best evidence

- Evidence syntheses – summaries of the existing knowledge
- Are now considered as the best evidence for decision-making
- **Systematic reviews – top of the hierarchy of evidence**
- Type of research (study design) that rigorously searches for and evaluates all available evidence (systematic) on a given clinical question



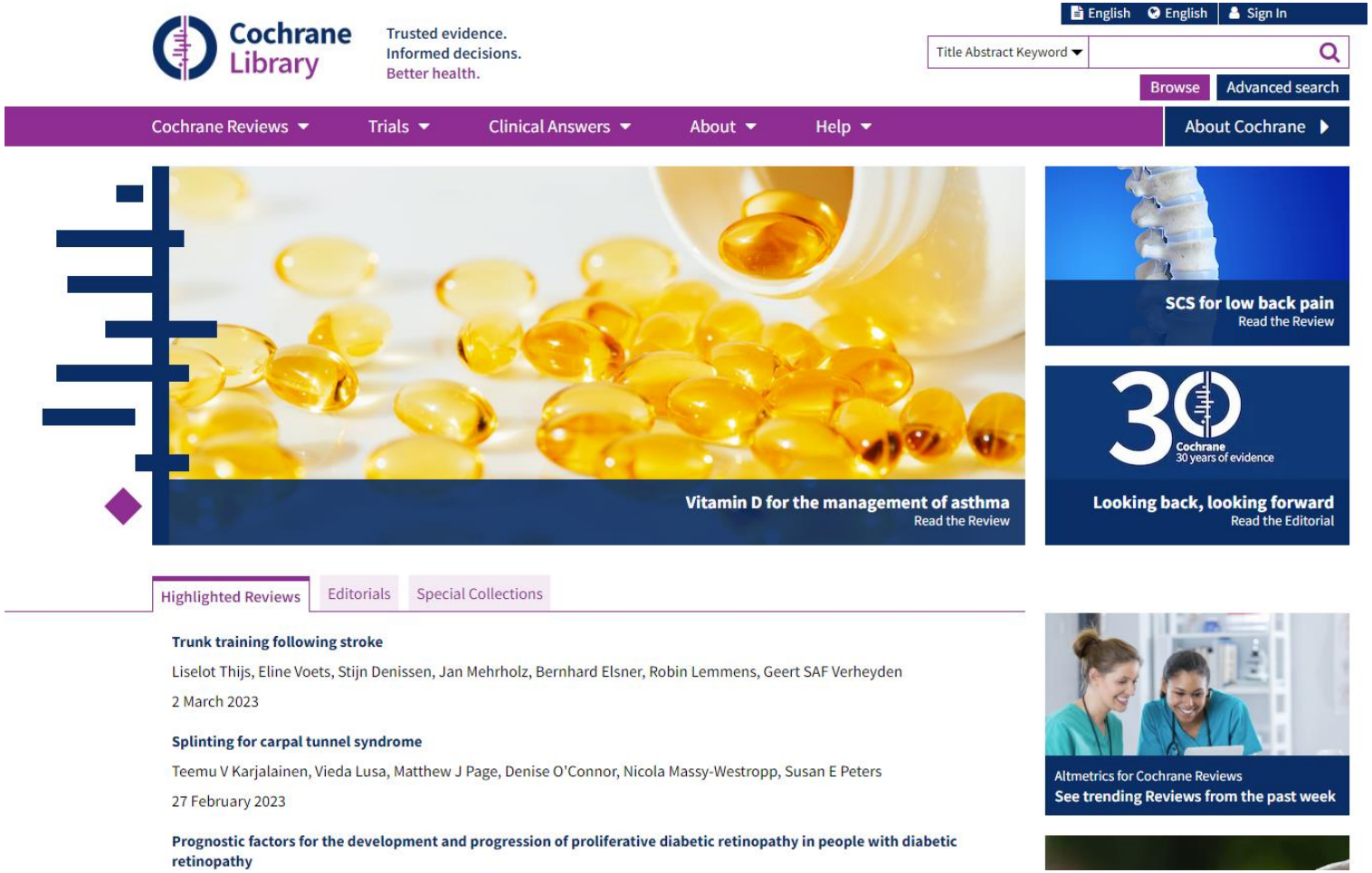
Cochrane reviews

- Cochrane: global organization, trying to make healthcare decisions get better
- Goal 1: Producing trusted evidence
  - There are now over 7,500 Cochrane Systematic Reviews published in the Cochrane Library
- Goal 2: Advocating for evidence
- Goal 3: Informing health and care decisions

Cochrane

Trusted evidence.
Informed decisions.
Better health.

Cochrane library



Plain language summaries of Cochrane reviews

- Each Cochrane review has both a scientific abstract and a plain language summary
- The main message of the review written in a simple language
- Plain language summaries are translated in 15 languages
- Aimed towards consumers, i.e. patients

- Croatian
- French
- German
- Japanese
- Korean
- Malay
- Persian
- Polish
- Portuguese
- Russian
- Spanish
- Simplified Chinese
- Tamil
- Thai
- Traditional Chinese

Homeopathic medicinal products for preventing and treating acute respiratory tract infections in children

Kate Hawke, David King, Mieke L van Driel, Treasure M McGuire Authors' declarations of interest

Version published: 13 December 2022 Version history

https://doi.org/10.1002/14651858.CD005974.pub6

Main results

In the treatment or prevention of ARTIs in children, homeopathic medicines showed little or no beneficial effects, whether individualised by a trained homeopath or a standard commercially available homeopathic therapy (11 studies, 1813 children).

Where results could be combined, there was little or no difference between groups for short-term cure (2 studies, 155 participants) or long-term cure (2 studies, 155 participants), but the evidence is very uncertain. There may be little or no difference between groups for prevention of ARTI (3 studies, 735 participants).

There was no important difference between homeopathy and placebo groups for parents' time off work, antibiotic use, or adverse events. We are unsure about the safety of homeopathic medicines because data on adverse events were poorly reported. Overall, the findings of this review do not support the use of homeopathic medicinal products for ARTIs in children.

What are the limitations of the evidence?

We have little confidence in the evidence because the studies involved only small numbers of children, used different types of homeopathic medicines for various ARTIs, contained numerous biases, and failed to report information about important outcomes. Further research could provide results that differ from the results of this review.

How up-to-date is this evidence?

The evidence is current to 16 March 2022.

Omega-3 fatty acids for depression in adults

Katherine M Appleton, Philip D Voyias, Hannah M Sallis, Sarah Dawson, Andrew R Ness, Rachel Churchill, Rachel Perry

Authors' declarations of interest

Version published: 24 November 2021 Version history

https://doi.org/10.1002/14651858.CD004692.pub5

Which studies were included in the review?

This review is an update of earlier work (Appleton 2015), using the same methods. We searched scientific databases for all randomised controlled trials in adults with MDD, where individuals received either n-3PUFAs or an alternative, that were completed up to January 2021.

We have included 35 relevant studies: 34 of them involving 1924 people compared the effects of n-3PUFAs with those of placebo, and one study involving 40 people compared the effects of n-3PUFAs with those of antidepressants. All studies were of direct relevance to our review, but we considered the certainty of the evidence to be low to very low.

What does the evidence from the review tell us?

At present, we do not have enough high quality evidence to determine the effects of n-3PUFAs as a treatment for MDD. We found a small-to-modest positive effect of n-3PUFAs compared to placebo, but the size of this effect is unlikely to be meaningful to people with MDD, and we considered the evidence to be of low or very low certainty, with many differences between studies. There was also insufficient high quality evidence to determine the effects of n-3PUFAs on negative side effects or numbers not completing studies.

Cochrane Database of Systematic Reviews | Review - Intervention

Cannabinoids for the treatment of dementia

Dina Bosnjak Kuharic, Domagoj Markovic, Tonci Brkovic, Milka Jeric Kegalj, Zana Rubic, Ana Vuica Vukasovic, Ana Jeroncic, Livia Puljak Authors' declarations of interest

Version published: 17 September 2021 Version history

https://doi.org/10.1002/14651858.CD012820.pub2

Our conclusions

Based on data from four small trials of short duration, it is uncertain whether cannabinoids have any beneficial or harmful effects on dementia, compared to placebo. Even if the benefit reported in these studies is real, the effect was modest and may not be important to people living with dementia. Furthermore, available studies were very short, with efficacy examined over 3 to 14 weeks, and one study did not report its methods and results completely. A large, well-conducted study is needed to understand better if cannabinoids are a useful treatment for people living with dementia.

The main take-away message

- There are many quacks and frauds
  - People who only want to make money on desperation of other people
  - Western medicine does not have an answer to all questions
  - People live longer and better, with chronic diseases, they want solutions (and want them fast)
  - They are an **easy prey of fraudsters**
- When we want to make decisions about health
- We should be informed by high-quality research evidence – research studies that are preferably higher in the evidence hierarchy
- Always look first for systematic reviews – rigorous evidence synthesis
  - Don’t trust good stories – ask for evidence

Merci