

# Proposal development: Background and significance of the study

Dr. A. Ogunniyi, FWACP  
University College Hospital  
Ibadan

WACP TOT: Grants writing Workshop  
Sept. 24-26, 2019

# Outline

- Background
  - Introduction
  - Literature review
  - Justification
- Library resources
- Practical examples
- Significance

# Background

- Introduction
- Literature review
- Gap in knowledge
- Justification/Rationale for the study

# Introduction

- What is known about the condition of interest?
- State the research problem or the purpose of the study.
- Provide the context and set the stage for your research question in such a way as to show its necessity and importance.
- Present the rationale of your proposed study and clearly indicate why it is worth doing.
- Briefly describe the major issues and sub-problems to be addressed by your research.

# Introduction

- State your hypothesis or theory, if any.
- Set the delimitation or boundaries of your proposed research in order to provide a clear focus.
- Provide definitions of key concepts.
- **Be focused but be factually detailed**

# Background

- **Background information** -
  - Description of available information on the research topic and the relevance to practice
  - Public health significance of the problem
  - Gaps that exist to justify why the chosen research study is essential and timely
  - Critical appraisal of available literature
  - Should be as current as possible (within 5 years) and evidence-based

# Background contd.

- Provide a frame of reference, a definition, or a discussion of the significance of the topic in the field.
- Discuss what other studies have said about the research topic and how the proposed study relates to that of other scholars who have written on the topic.

# Background contd.

## Suggested approach:

- Why is this research important?
- Does this study address an important problem?
- Identify key themes linked with the specific aims/objectives
- If the aims are achieved, how will scientific knowledge be advanced?



# Background - Literature Review

- Places study within the context of existing knowledge and other studies in your discipline.
- It recognizes the contributions of other scholars
- It enables the researcher to point out what is new about the research.
- It is important to indicate:
  - if the study is building on a previous study or a well-established theory;
  - addressing certain gaps in knowledge that exist;
  - or adding to existing knowledge by doing a study with a different or more complete methodology.

# Literature Review

- Should demonstrate breadth of knowledge in this field
- Should cite adequately work done in this field locally, nationally and internationally.
- Historical perspective or trends should be provided.
- Cited studies should be properly referenced.

# Critical appraisal of Literature

- the process of carefully and systematically analyzing the design and outcomes of a scientific research (evidence) to judge its internal and external validity (trustworthiness), the reliability and relevance (worth, significance, importance) of the results and conclusions in a specified context before using it to inform decision-making (clinical practice, policy or future research)

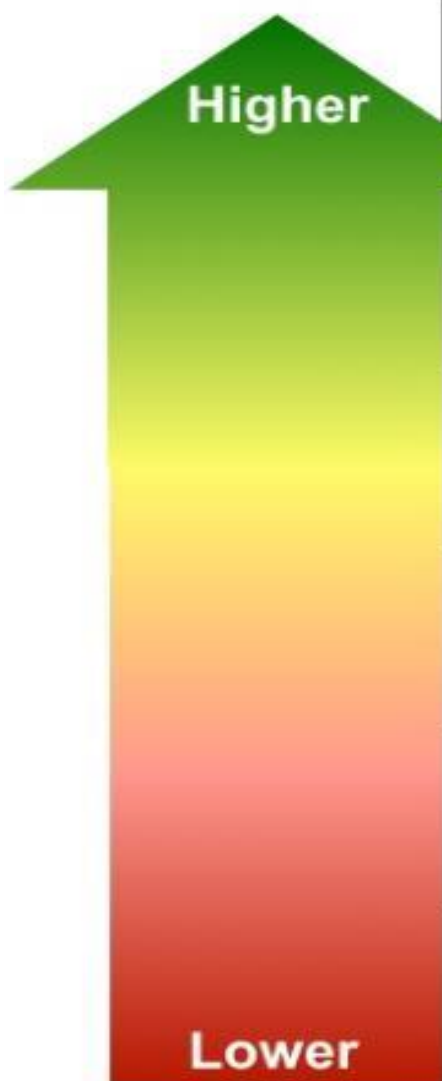
# Classification of Evidence

- I Evidence from well designed prospective study in a broad spectrum of persons using “gold standard” for case definition, blinded assessment
- II Evidence from a well designed prospective study of narrow spectrum of persons or well designed retrospective study of a broad spectrum of persons using “gold standard” and blinded evaluation
- III Evidence from retrospective study in a narrow spectrum and test applied in a blinded evaluation
- IV No blinding OR evidence provided by expert opinion alone or in descriptive case reports (without controls)

# Grading of Evidence

- Grade A: Based on RCT + meta-analysis; Positive results
- Grade B: RCT with limitations; large observational studies
- Grade C: Observational studies/case series

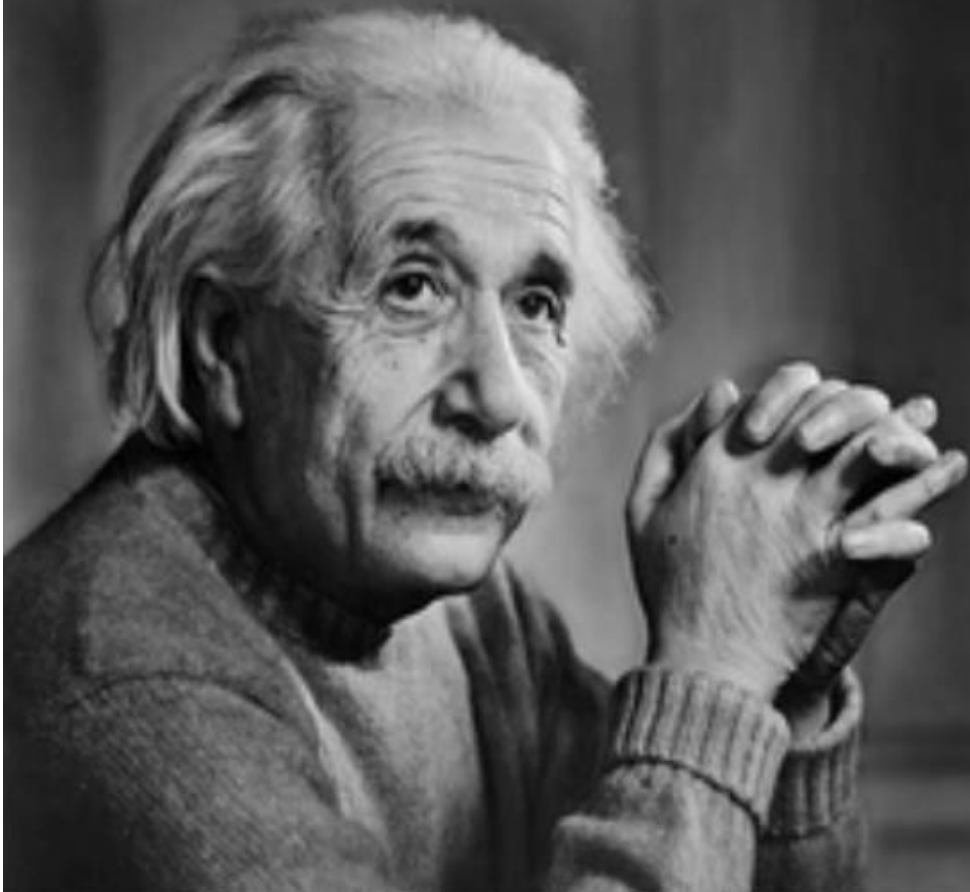
# Levels of Evidence



Level	Example of Evidence
<b>Level 1</b>	Meta-analysis of Homogenous RCTs Randomized Control Trial
<b>Level 2</b>	Meta-analysis of Level 2 or Heterogenous Level 1 Evidence Prospective Comparative Study
<b>Level 3</b>	Review of Level 3 Evidence Case-control Study Retrospective Cohort Study
<b>Level 4</b>	Uncontrolled Cohort Studies Case Series
<b>Level 5</b>	Expert Opinion Case Report Personal Observation
<b>Foundational Evidence</b>	Animal Research <i>In Vitro</i> Research Ideas, Speculation

If you can't explain it **simply**, you don't understand it well enough.

– Albert Einstein



# Proficiency in Science

“When you can measure what you are speaking (*sic..writing*) about, and express it in numbers, you know something about it. When you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge but you have scarcely, in your thoughts, advanced to the stage of science.”

W. Thomson, 1<sup>st</sup> Baron Kelvin. J R. Coll Phys Edin 2018



# Summary: Background information

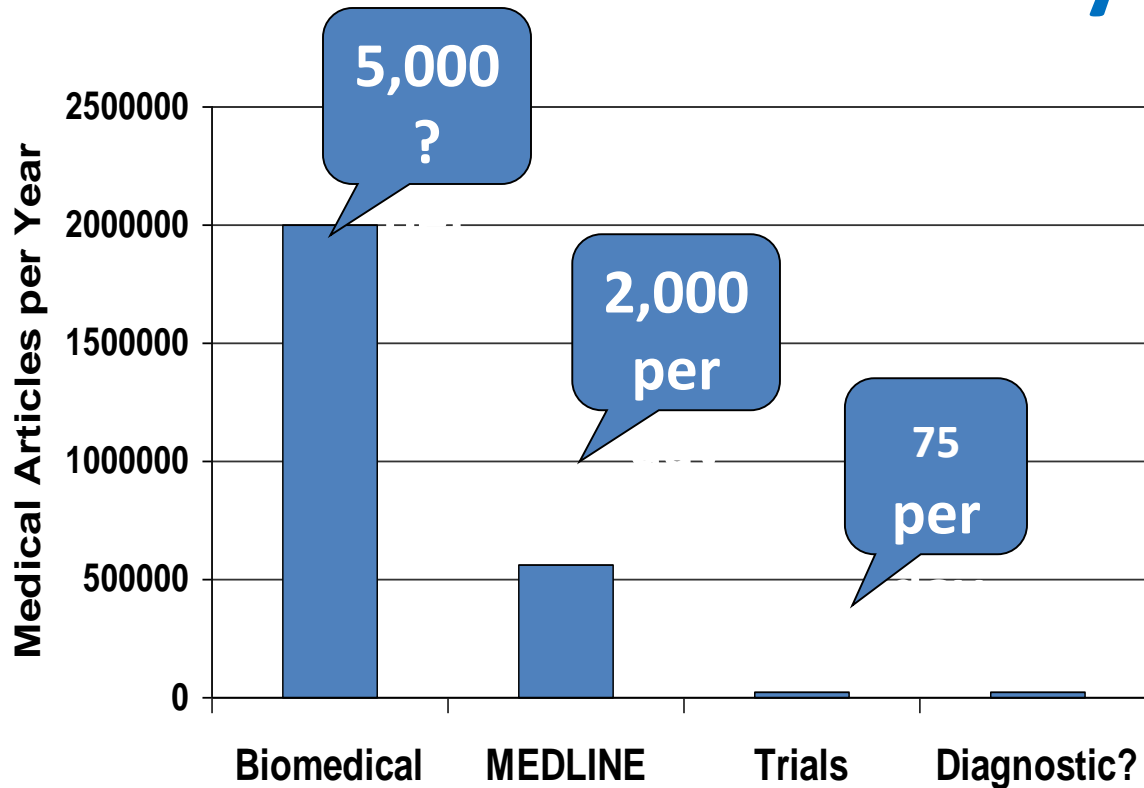
- Aim to convince the funder that the issue you want to tackle is important
- Describe the situation in both factual and human interest terms
- Itemize what research you have done (preliminary data)
- Be focused on the problem and emphasize local implications
- Relate the research problem to the solution being proposed
- Show that the assembled team is an expert on the issue.
- Don't assume the funder knows much about your expertise.
- **Be modest - don't describe the problem as the absence of your project.**

# Justification or Rationale for the Study

- Provide convincing proof of the relevance and importance of the proposed study
  - must address a priority health problem
  - should show the benefits of answering the research question
  - need to demonstrate feasibility

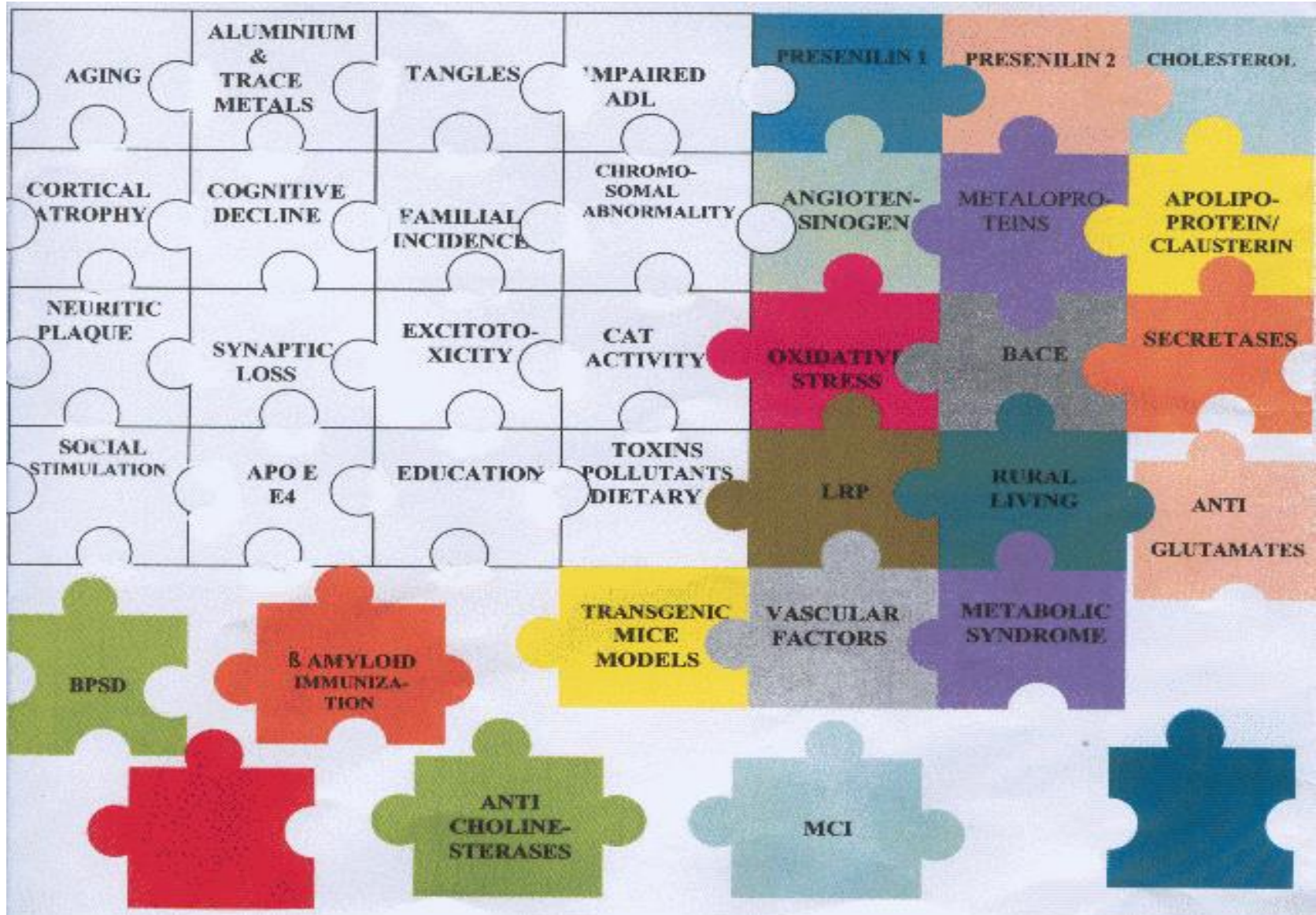
# Information Management

# Why do we need to use evidence efficiently?

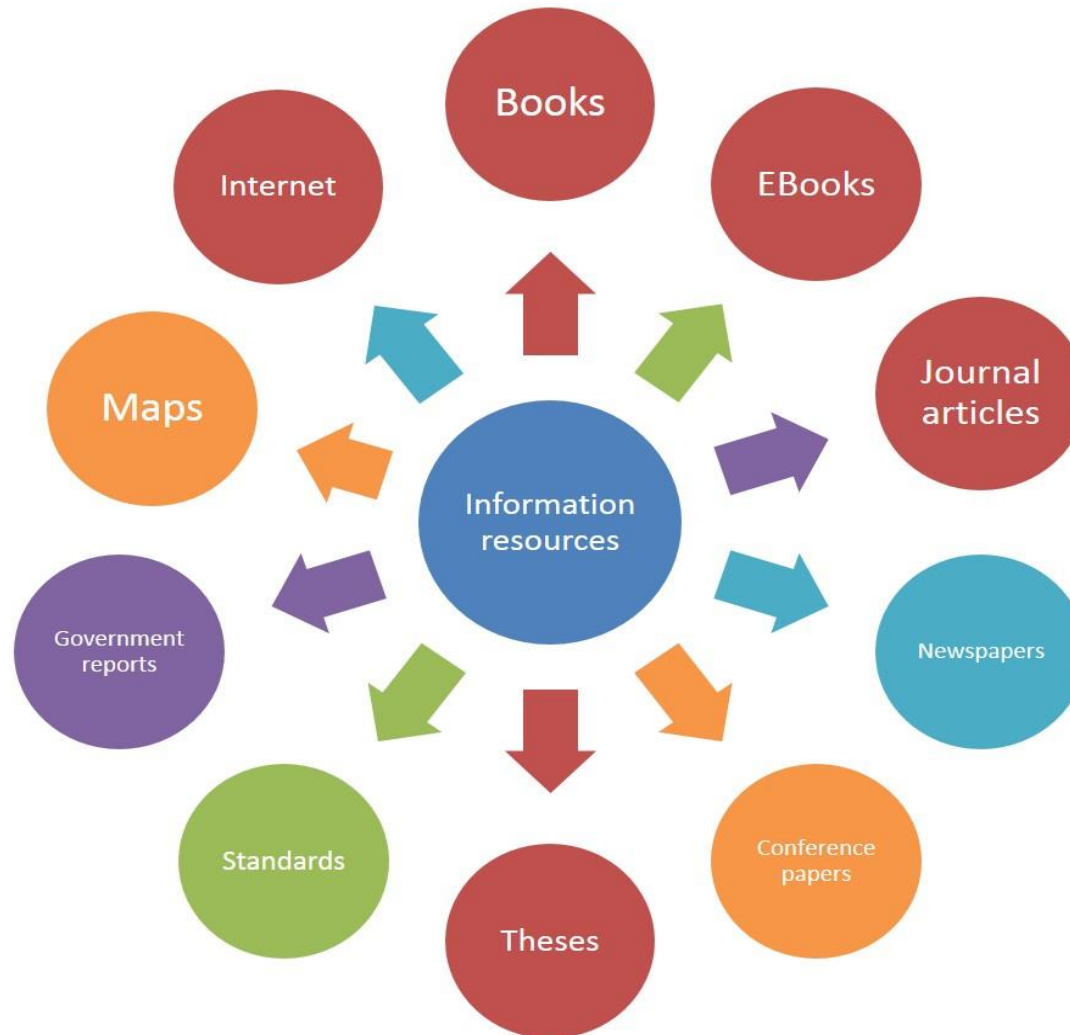


*EBP: informing decisions with the best up-to-date evidence*

# Alzheimer's Disease - Jigsaw Puzzle



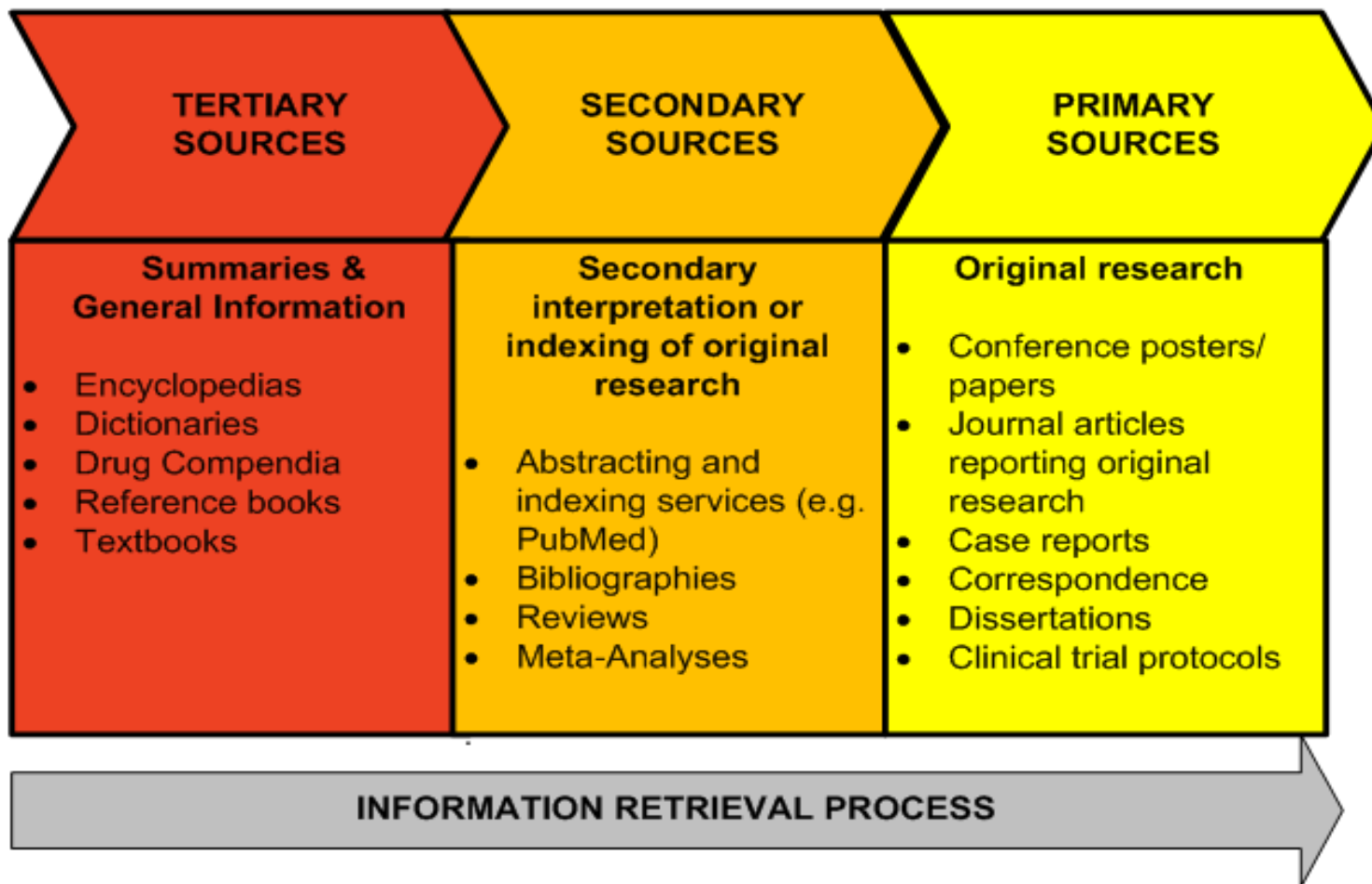
# Information sources



# Choosing the Right Source (s) to Search

## Types of Information Sources and Information Retrieval Process

Sources are considered primary, secondary, or tertiary based on the originality of their information and its proximity to the original source. When you are looking for answers you may need to consult several types. No single source is comprehensive



# Bibliographic Databases

- African Index Medicus (AIM)
- African Journal on Line (AJOL)
- Academic Search Premier
- EMBASE
- Jaypee Digital Database
- MEDLINE/PubMed
- Proquest
- Scopus
- Science Direct
- Springer Link
- Web of Science



# *Search Techniques*

Search techniques are the various methods employed in conducting a focused online literature search

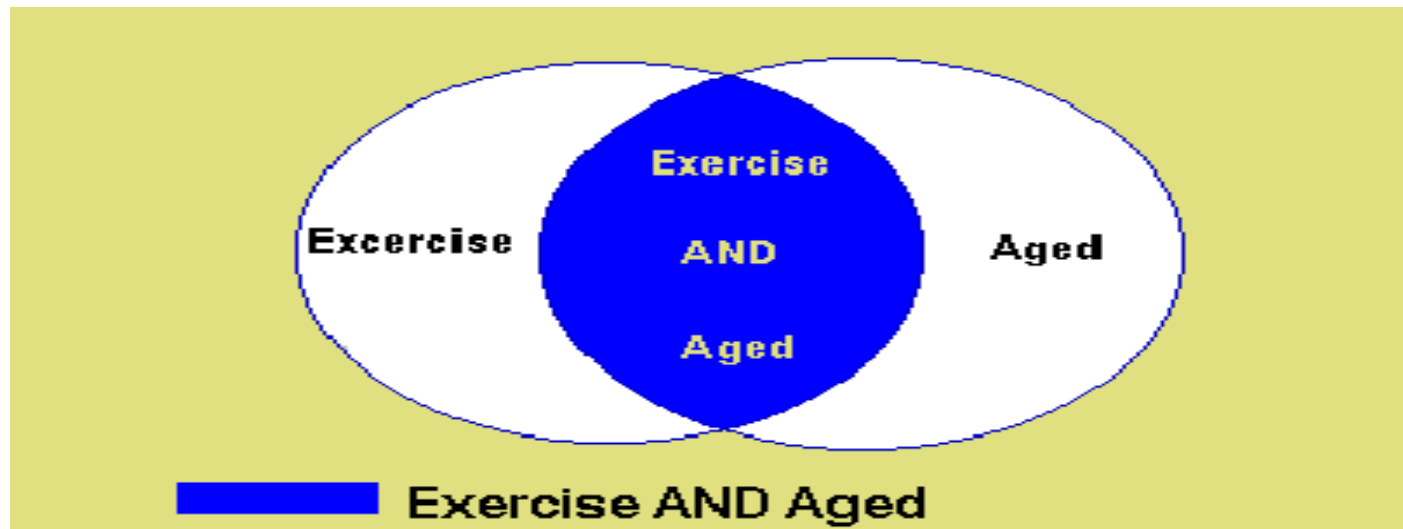
## **Types of Search Techniques:**

- Keyword searching
- Boolean Logic (AND, OR, NOT)
- Field searching
- Phrase searching
- Parenthesis
- Truncation and wildcards
- Controlled vocabulary e.g. MeSH
  - Subheadings

# *Boolean Operator: AND*

- **AND** links words or phrases that must both appear in the same article
- If you want to focus your search results, use Boolean operator **AND** to connect additional word(s)

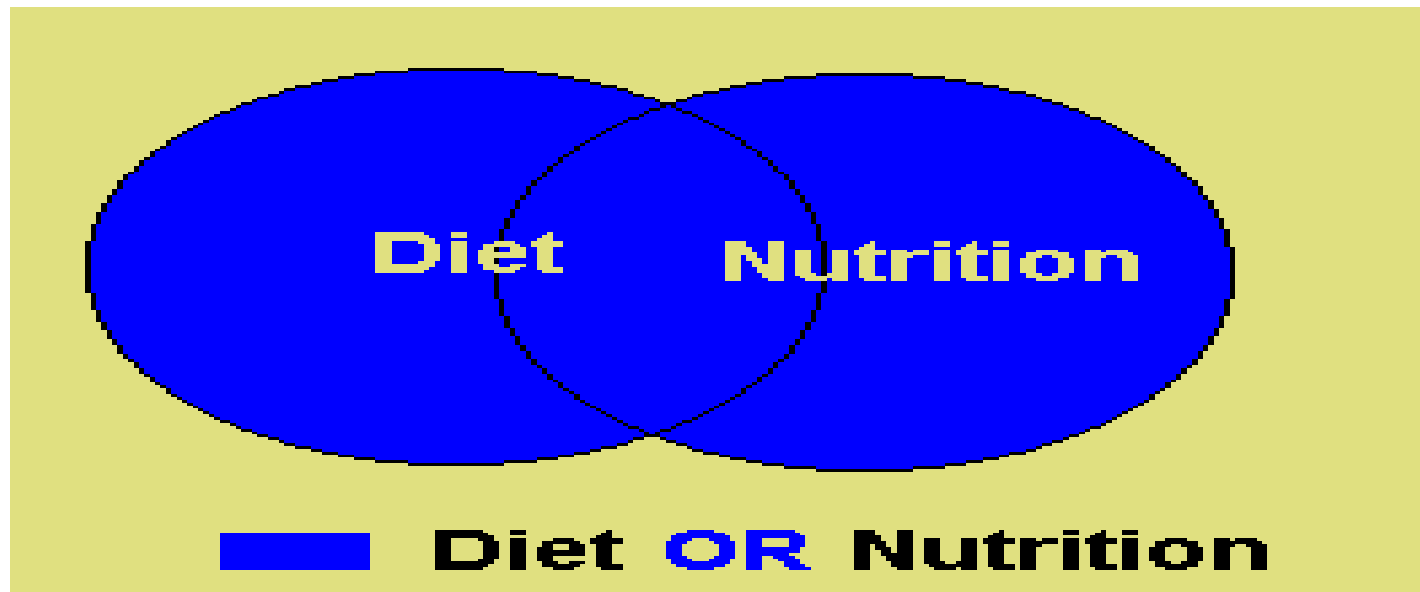
Example: **Exercise AND Aged** -- finds both exercise and aged anywhere in the same article



# Boolean Operator: **OR**

- **OR** links synonyms, alternative forms of expression, acronyms, and so on
- If you want to expand your search, use Boolean operator **OR** to connect additional word(s)

Example: **Diet or Nutrition** -- finds either diet or nutrition in the same article

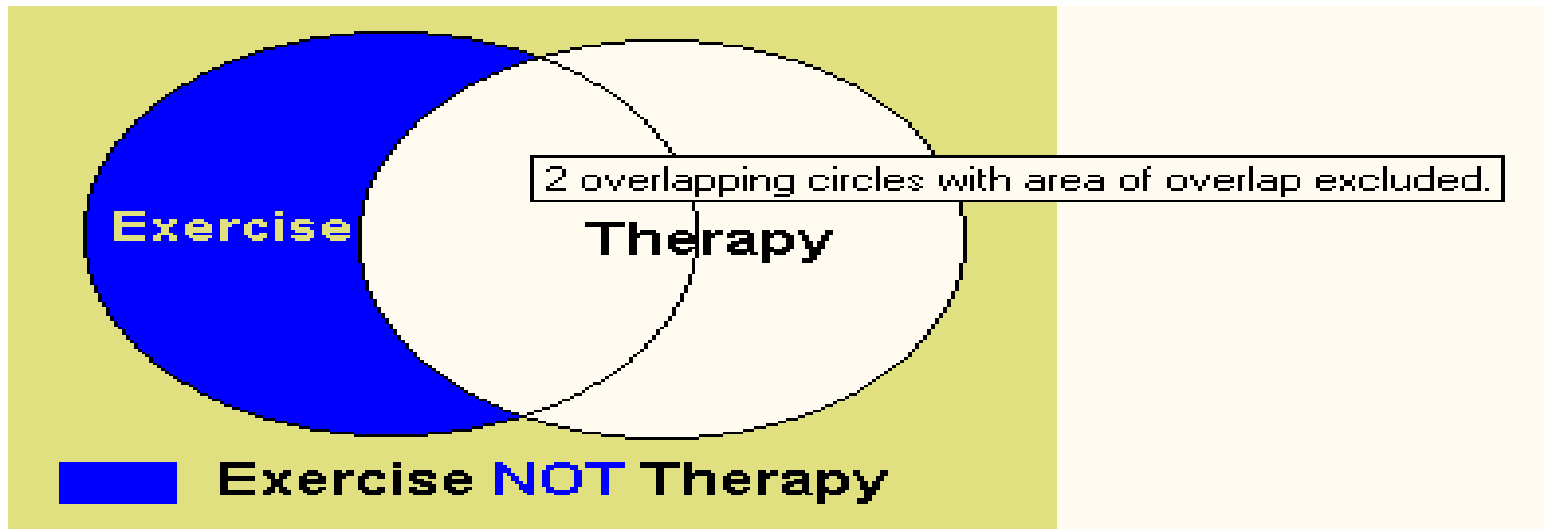


OR is suitable when keyword has a synonym

# Boolean Operator: **NOT**

- **NOT** excludes words or phrases from your search
- If you want a word or phrase to be excluded from your search, use the **NOT** operator
- **Example:** **Exercise NOT Therapy** --- finds exercise in the same articles, exclude therapy

Malaria **NOT** Fever --- retrieves only articles on malaria and excludes articles on fever



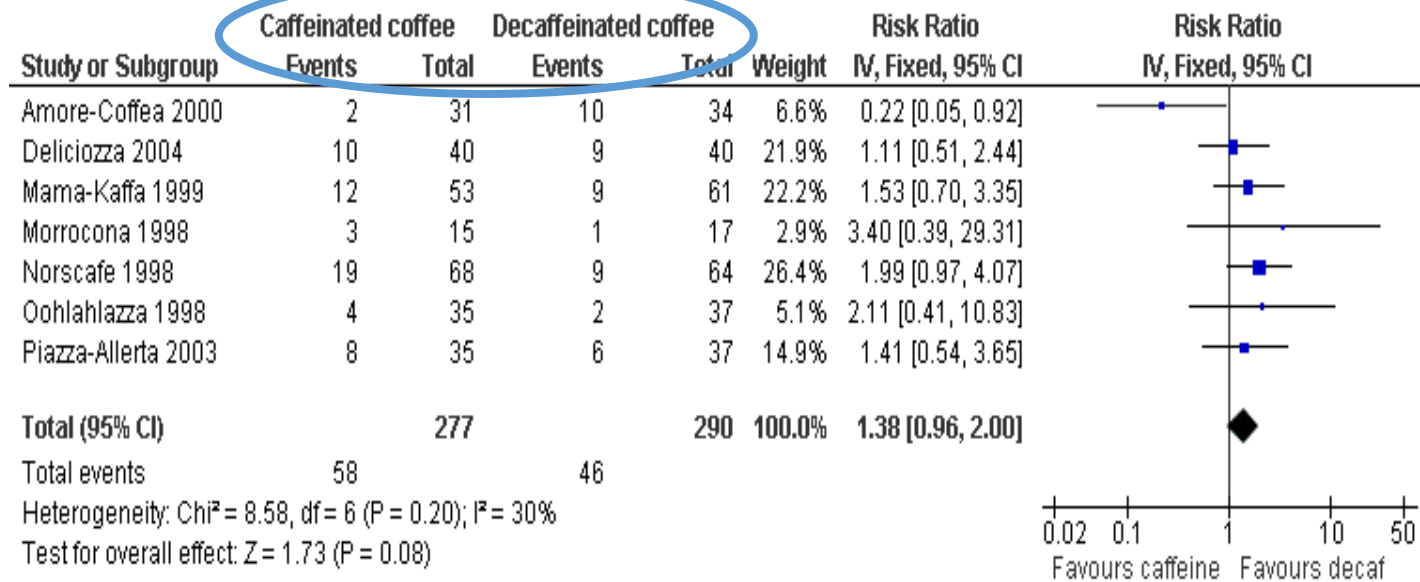
# Sources of Clinical Evidence

## EBM Resources

- [Cochrane Library](#)
- [PubMed Clinical Queries](#)
- [DynaMed](#)
- [Clinical Evidence](#)
- [Best Evidence](#)
- [Up-To-Date](#)
- [Nice database](#)
- [ACP Journal Club](#)

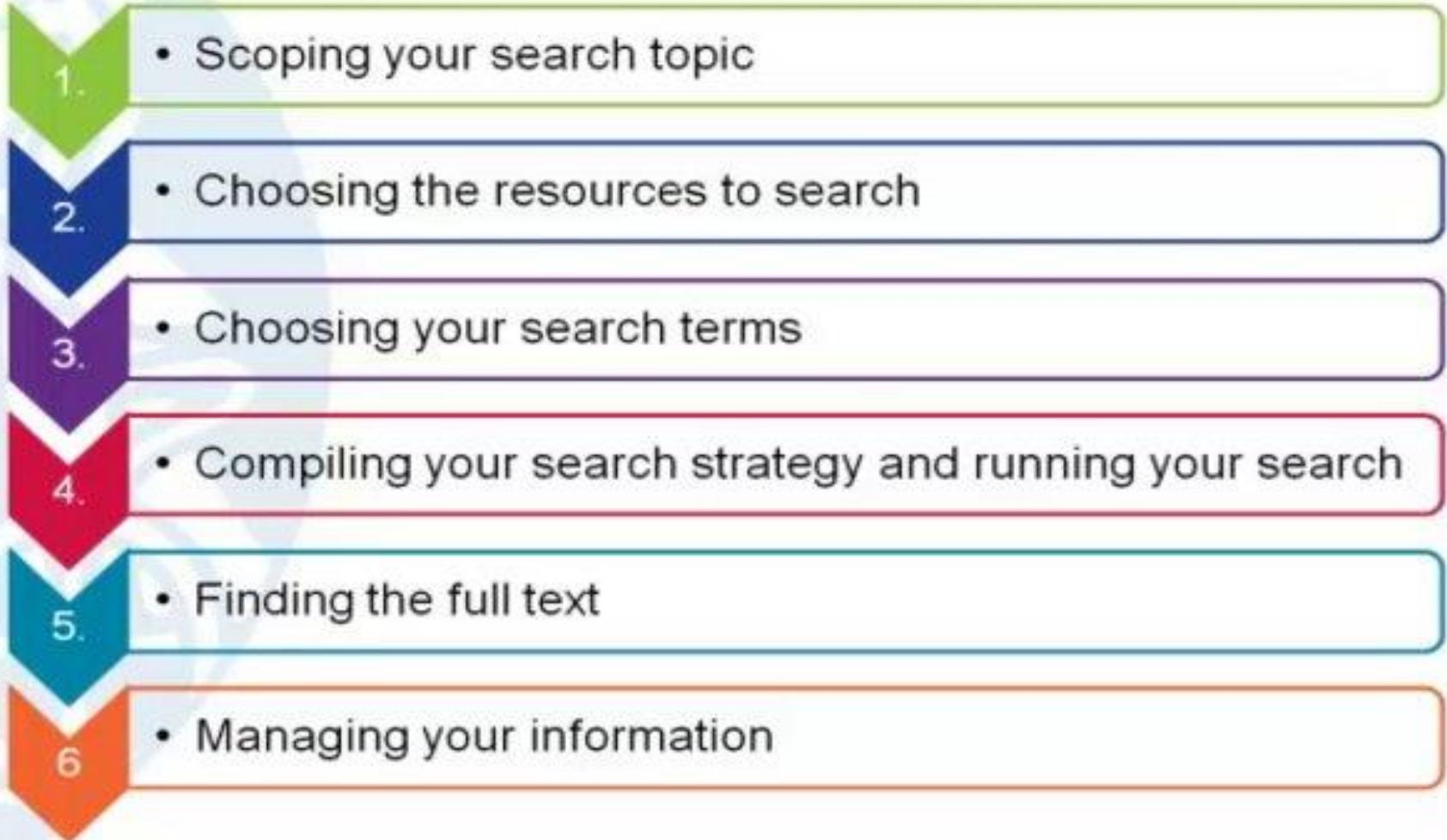
# Forest plots: Caffeine for preventing daytime drowsiness

## Headache at 24 hours



- headings explain the comparison

## Six steps to an effective literature search:



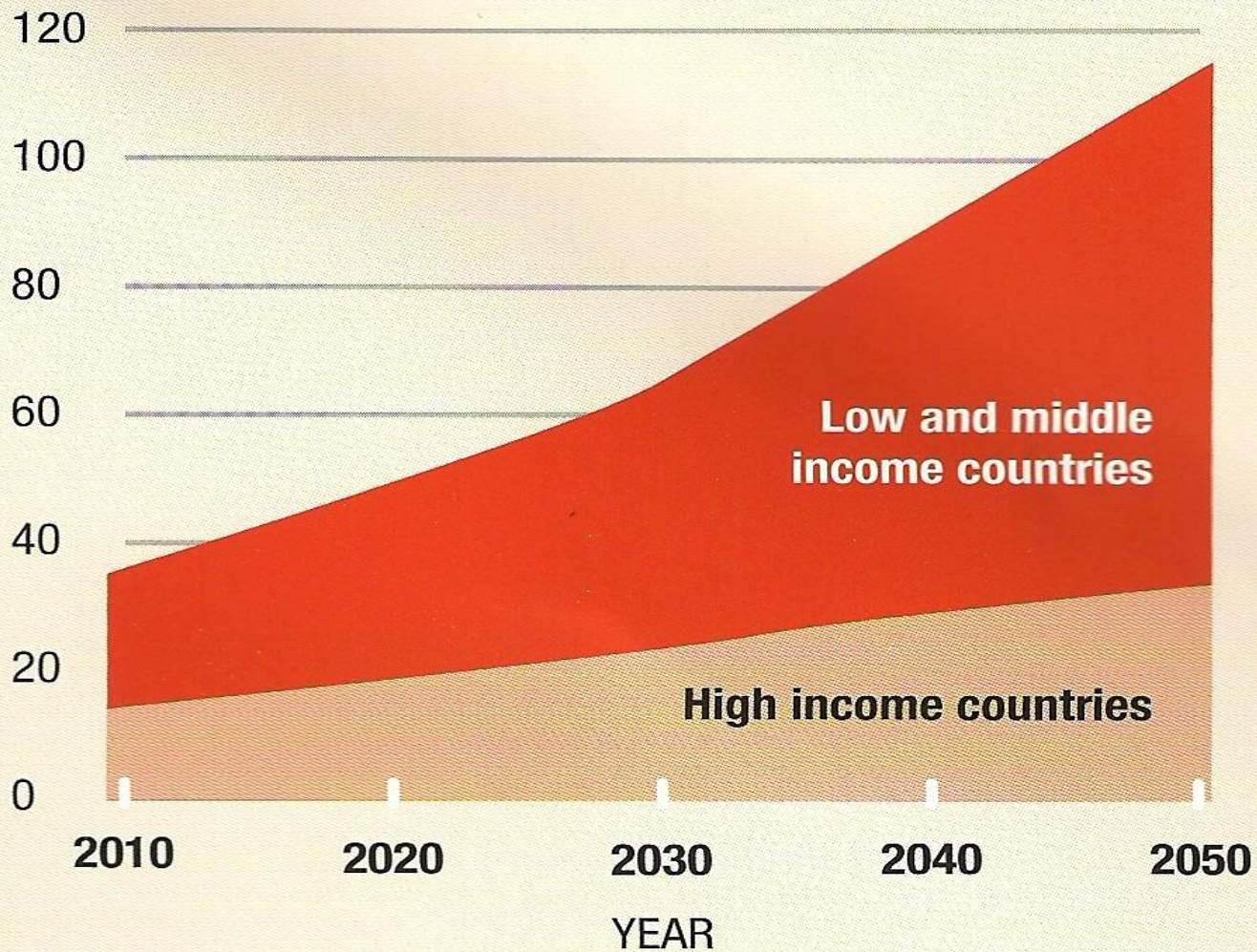
# Organising and Managing Information

- Endnote
- Mendeley
- Zotero
- Reference Manager
- Procite
- RefWorks
- Papers



# Research vignettes

## Growth in numbers of people with dementia (millions) in high income countries and low and middle income countries



---

## THE EPIDEMIOLOGY OF ALZHEIMER'S DISEASE

---

A S Henderson

*National Health and Medical Research Council  
Social Psychiatry Research Unit  
The Australian National University  
Canberra*

---

Epidemiological research on Alzheimer's disease offers four contributions: the possibility of identifying risk factors; completion of the clinical picture; information for services and policy-making; and the construction of instruments for screening and for measuring change over time. Prevalence surveys have often not attempted to differentiate the types of dementia. The incidence rate is believed to be about 1% in the elderly as a whole, but it rises steeply with age. Risk factors reported so far are age, a family history of Alzheimer-type dementia, having Down's syndrome or a family history of it, head injury and thyroid disease. For further progress, particularly in identifying risk factors, the need now is to have uniform criteria for the presumptive diagnosis of Alzheimer's disease; and for a number of well-designed case-control studies on sizeable samples.

---

First, field surveys and case-control studies may identify risk factors. Eighty percent of the very elderly do not develop any dementia, whether SDAT or other types. Nothing is known about those biological or experiential attributes which distinguish them from those afflicted. Some have asserted that epidemiological studies are unlikely to yield clues to aetiology, which will come instead from the laboratory. It would be wiser to adopt a research strategy which allows integration of laboratory findings and epidemiological studies. Both approaches have something to learn from the facts provided by the other; and each can generate hypotheses for the other to test.

Second, epidemiological studies help to complete the clinical picture. Cases which reach hospital or specialist services are only a subsample of all persons with the disorder; and they may be systematically different from others, as happens with Berkson's bias.<sup>7</sup> Williamson et al.<sup>8</sup> showed that as many as four-fifths of dementia cases in the community were unrecognized by their general practitioners. It therefore seems likely that clinicians do not have a close familiarity with the whole spectrum of dementia, including SDAT. This may be particularly relevant to the early stages of the disorder, where there may be features that later become buried and thereafter permanently inaccessible because of the disease process itself.<sup>9</sup> Systematic studies of total populations of the elderly, using instruments sufficiently sensitive for detection of mild cases, may complete the clinical picture of Alzheimer's disease (AD), including the possibility that a mild form of cognitive loss does exist and that it is benign, as proposed by Kral.<sup>10,11</sup>

A third contribution is to obtain data which help in organising services and deploying limited resources. The total prevalence of

As at November 1984, senile dementia of the Alzheimer type (SDAT) was relatively unknown in Nigerians.... There seem to be grounds for the hypothesis that SDAT is a Western disease and that it is the consequence of some exposure to which the species is not adapted.

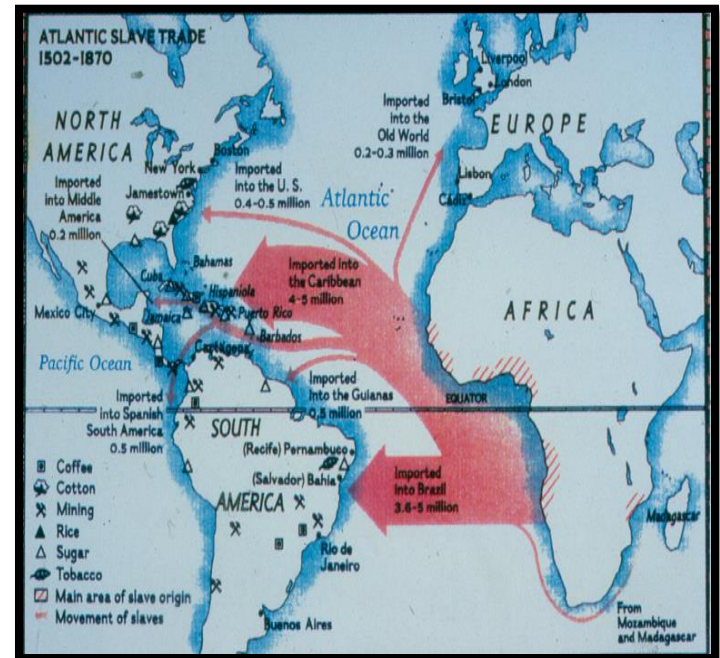
Henderson AS 1984

# Research Background 1

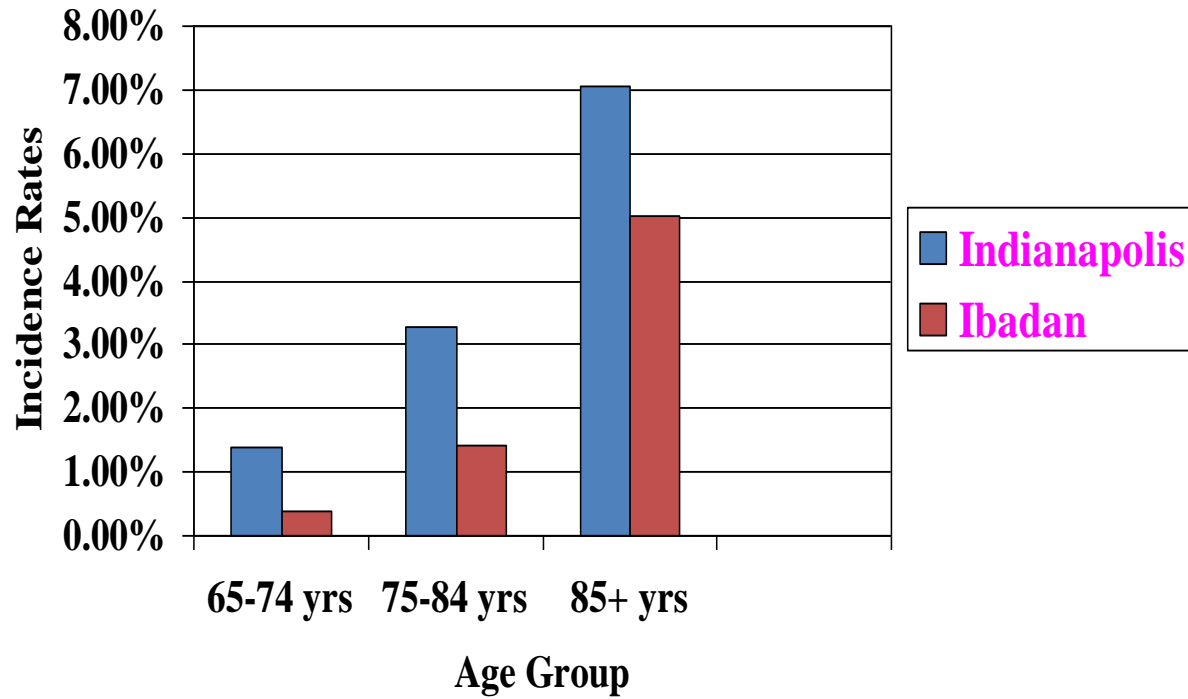
“Comparative cross-cultural, transnational, geographic epidemiologic studies would be useful in delineating the true risk factors for the age-associated dementias, particularly AD.

Identification of populations or communities with significantly lower or higher prevalence rates of AD could greatly enhance the search for environmental risk factors for AD...”

Osuntokun et al (1992)



## Age-specific Incidence Rates of AD\*



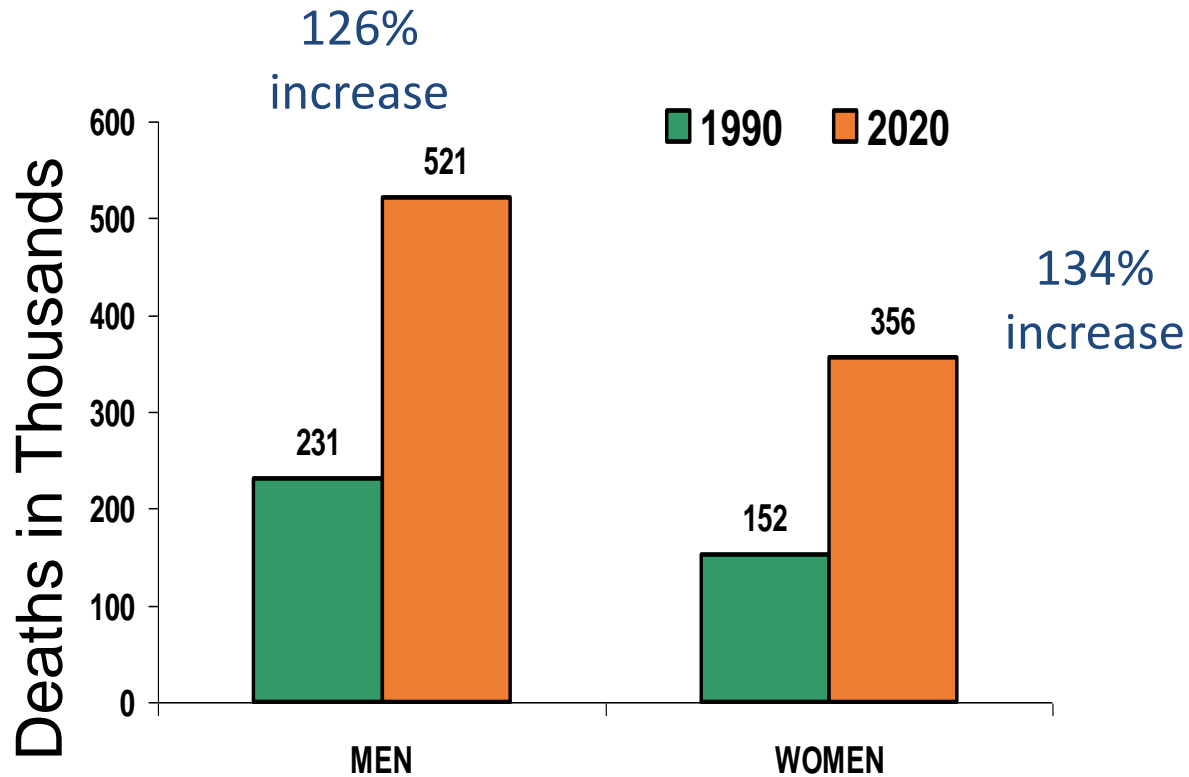
\*AD Alzheimer's Disease

# Grand challenges in chronic NCDs\*

- Chronic NCDs are reaching epidemic proportions worldwide
- They affect people of all ages, nationalities and classes
- They account of 60% of deaths worldwide; 80% of these in low and middle income countries
- They account for 44% of premature deaths worldwide
- Without concerted actions, some 388 million people will die of one or more CNDCs in the next decade

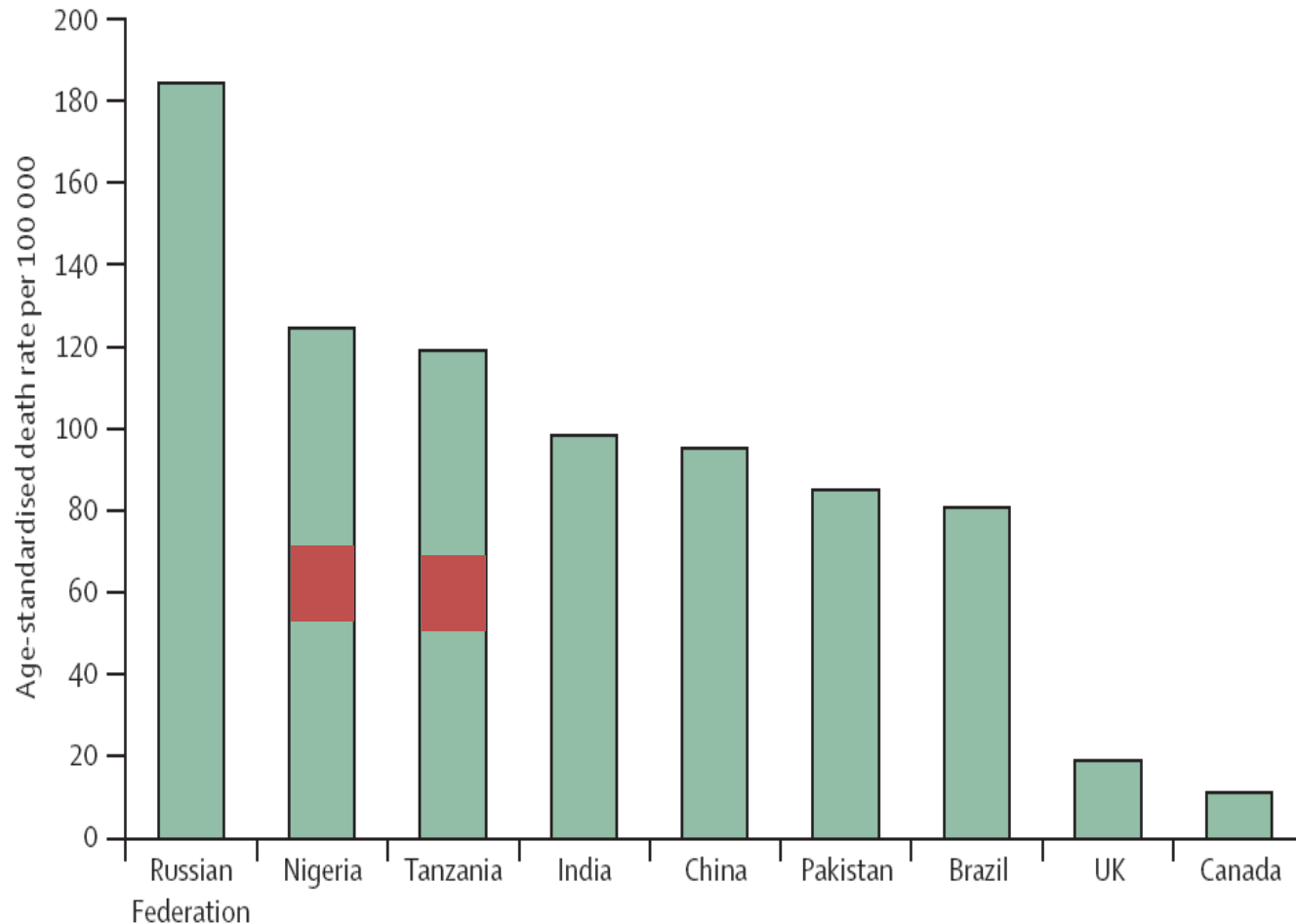
# Projected Changes in Cerebrovascular Disease Mortality in Sub-Saharan Africa, 1990 to 2020

---



Murray & Lopez, 1996

# Stroke Mortality in Adults aged 30-69 years, in Nigeria, Tanzania, and Selected Countries, Projections for 2005



*Strong K, Mathers C, Bonita R. Lancet Neurol 2007;6:182–87*



# Profile of Stroke Mortality in Africa

Author	Year	Case Fatality Rate (%)			
		24hrs	7 days	30 days	6 months
Dada et al	1969	13.1	27.8	36.1	-
Osuntokun et al	1979	-	-	34.9 ( 21-days)	-
Ojini et al	2002	-	26.0	-	-
Walker et al	2003	-	-	27.0	44.0
Ojini et al	2004	-	-	41.2	-
Ogun et al	2005	9.0	28.0	40.0	46.0
Wahab et al	2008	-	-	28.0	-
Jowi et al	2008	-	-	38(CI); 56 (ICH)	-
Damasceno et al	2010	-	-	49.6	-
Desalu et al	2011	-	-	23.8	-

## The 10 'Best Buys' to combat heart disease, diabetes and stroke in Africa

Bongani M Mayosi

*The Economist* has branded Africa as 'the world's fastest growing continent'.<sup>1</sup> The economy in many African countries is growing at a rate that is higher than that of European countries. HIV infection is coming under control and life expectancy is increasing as a result of widespread use of antiretroviral therapy.<sup>2</sup> The rising economic prosperity and improving health status has been associated with what can

Africa where national preventive programmes for non-communicable disease have been initiated.<sup>2 18</sup>

While the relatively low rates of atherosclerotic diseases among Africans, and the early evidence of falling mortality from circulatory disorders are a cause for optimism, there are three factors that put the cardiovascular health of Africans at great risk. The first is the increasing urbanisa-

chronic respiratory diseases) and their four risk factors (tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol) constitute the target of the '4-by-4' approach. While targeting these eight NCDs and risk factors is also important in Africa, it will not be enough. A '5-by-5' strategy is needed, addressing neuropsychiatric disorders as the fifth NCD; and transmissible agents (such as *Streptococcus pyogenes*) that underlie the neglected tropical diseases (such as rheumatic heart disease) and other NCDs as the fifth risk factor.<sup>23</sup>

There are 10 key population-level interventions of proven cost-effectiveness that are well suited to the low-income settings of African countries (box 1). Concerted

**Box 1 Recommendations of priority interventions to ministries of health for the prevention and control of heart disease, diabetes, and stroke in the African region: The 10 'Best Buys'**

1. Provide multidrug regimens (eg, a fixed dose pill containing an angiotensin converting enzyme (ACE) inhibitor and diuretic for hypertension), and adopt an absolute risk approach to prevent stroke, chronic kidney disease, ischaemic heart disease and heart failure.
2. Food control legislation with public education for reducing the salt and saturated fat content of food.
3. Promotion of physical activity in schools, workplaces and the built environment.
4. Maintain and extend tobacco control activities especially for young people, and encourage quitting by means of counselling and nicotine replacement therapy.

# Significance

- The importance/contribution of the proposed study
- Public health impact/Lives saved
- Relevance
- Cost effectiveness/Value for money
- Link with the SDGs
- Value

# Significance contd.

- Does the project address an important problem or a critical barrier to progress in the field?
- If the aims of the projects are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved?
- How will successful completion of the aims change the concepts, methods, technologies, treatment, services, or preventive interventions that drive this field?

# Conclusion

- Background section of the grant proposal should highlight the burden of disease/ problem statement
- Key concepts/ gaps with clear rationale and objectives
- Musty be “catchy and engaging” otherwise, many reviewers may lose interest

# Conclusion contd.

- Experience counts
- Availability of preliminary data is very essential
- Situate the problem in terms of public health value and economic benefits
- Show that the problem can be solved, and the chosen method is sure to guarantee success
- Use simple and clear language
- No plagiarism
- Information provided must be recent
- Do not “reinvent the wheel”



"WE KNEW THAT ALREADY! SEEMS LIKE WE DIDN'T  
NEED TO DO THE RESEARCH AFTER ALL!"



# Acknowledgements

- Dr. G. A. Ajuwon – slides on Library resources
- Dr E Effa – slides on Cochrane Database

# Thank you for listening

E-mail: [aogunniyi892@gmail.com](mailto:aogunniyi892@gmail.com)  
[aogunniyi@com.ui.edu.ng](mailto:aogunniyi@com.ui.edu.ng)

Tel: 08038094173