

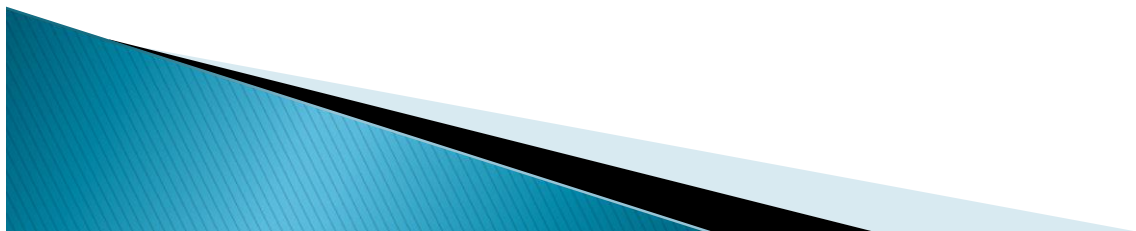


# Research-mid

**Doctor: Munir Abu-Helalah**


# Moving from research idea to research question

- ▶ Think about how your research:
  - \* may resolve theoretical questions in your area
  - \* may develop better theoretical models in your area
  - \* may identify new risk factors for a disease
  - \* may change current management plans

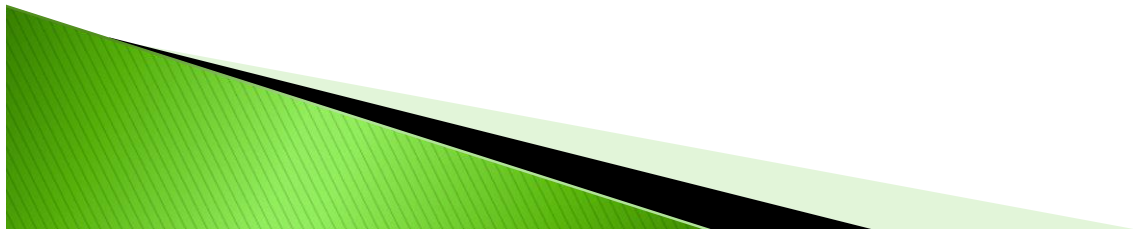


## Frameworks for Research Questions

Applying a framework when developing a research question can help to identify the key concepts and determine inclusion and exclusion criteria.

جدا مهم حفظ وفهم 

<b>PICo:</b>	Population/Participants, phenomenon of Interest, Context
<b>PICO(S):</b>	Patient/Problem, Intervention, Comparison, Outcome, (Study design)
<b>PECO(S):</b>	Patient/Problem, Exposure, Comparison, Outcome, (Study design)
<b>PESICO:</b>	Person, Environment, Stakeholders, Intervention, Comparison, Outcome
<b>PIPOH:</b>	Population, Interventions, Professionals/Patients, Outcome, Healthcare Setting
<b>PS:</b>	Population, Situation
<b>SPICE:</b>	Setting, Perspectives, Intervention, Comparison, Evaluation



# PICOT

- ▶ PICOT is a mnemonic that helps you remember the key components of a well-focused question. It stands for:
  - **P** = Patient, Population or Problem
  - **I** = Intervention, Prognostic Factor, or Exposure
  - **C** = Comparison (optional)
  - **O** = Outcome
- ▶ **T** = Time



▶ **Intervention/therapy**

- ▶ In \_\_\_\_\_(P), what is the effect of \_\_\_\_\_(I) on \_\_\_\_\_(O) compared with \_\_\_\_\_(C) within \_\_\_\_\_(T)?
  
- ▶ In the aged population, what is the effect of exercise programs on accidental falls, as compared with no exercise?

▶ **Etiology**

- ▶ Are \_\_\_\_\_(P) who have \_\_\_\_\_(I) at \_\_\_\_\_(Increased/decreased) risk for/of \_\_\_\_\_(O) compared with \_\_\_\_\_(P) with/without \_\_\_\_\_(C) over \_\_\_\_\_(T)?
  
- ▶ Are adult smokers with a history of childhood asthma at increased risk of COPD compared to adult smokers with no history of asthma?

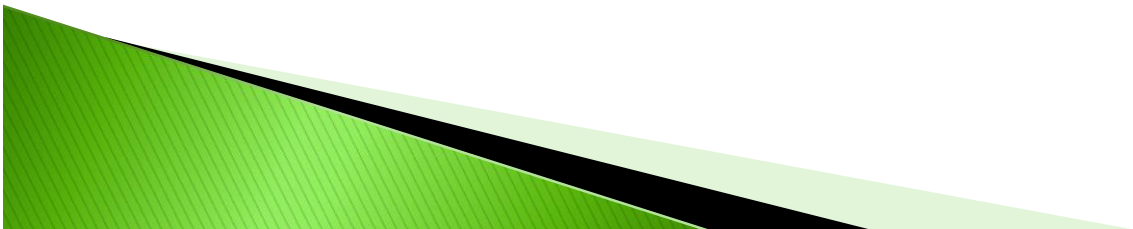


# Public Health:

▶ PICO(T) is commonly used to formulate research questions, sometimes referred to as 'PI/ECO' (Population/participants, Intervention/Exposure, Comparison, Outcome). The PI/ECO structure can be readily amended for different question types:

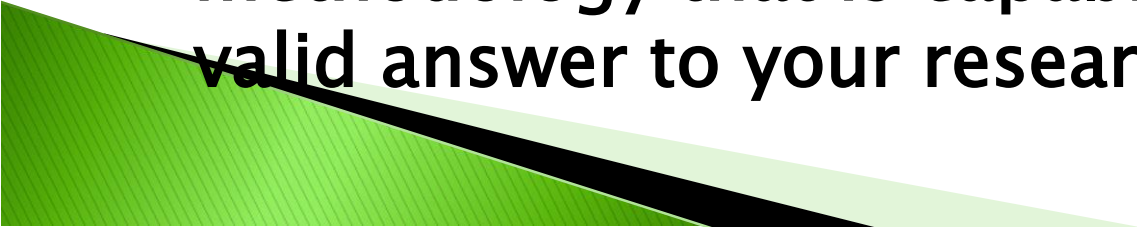
▶ A simple example might be:

- **Population / participants:** People with permanent residence in Jordan
- **Intervention (or Exposure):** Hypertension
- **Comparison:** Respondents without hypertension
- **Outcomes:** Cardiovascular disease or cardiovascular mortality
- **Types of studies:** Cross-sectional, Longitudinal



# Literature Review

## b. Improve your methodology:

- ▶ A literature review tells you:
    - I. If others have used procedures and methods similar to the ones that you are proposing?
    - II. Which procedures and methods have worked well for them?
    - III. What problems they have faced with them?
  
  - ▶ Thus you will be better positioned to select a methodology that is capable of providing valid answer to your research questions.
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# Literature Review

Broaden your knowledge base in your research area:

It ensures you to read widely around the subject area in which you intend to conduct your research study.

- ▶ As you are expected to be an expert in your area of study, it helps fulfill this expectation.
- ▶ It also helps you to understand how the findings of your study fit into the existing body of knowledge.





# Literature Review

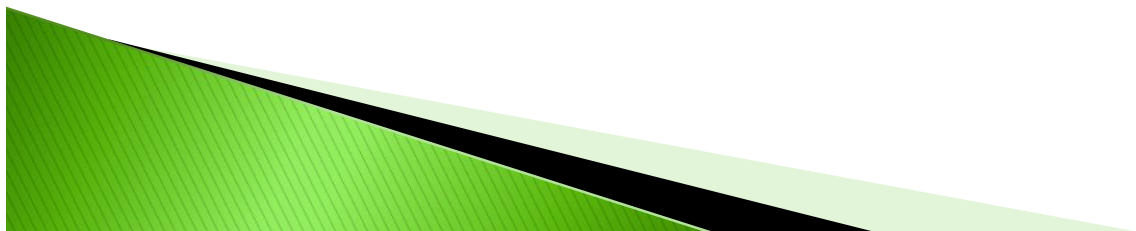
1. books
2. Journals
3. Medical databases: PubMed, Medline..etc.
4. Other publications:  
(reports, census, surveys etc)
5. Other Internet search  
(**scientific evidence based sites or sites of official medical bodies**)



# Literature Review

## JOURNALS

- ▶ Journals provide you with the most up-to-date information
- ▶ **Be careful with open access journals without solid peer review process**



# How to start and end the literature review/introduction part

- ▶ Starting with:
  - a. Common illness: burden, epidemiology and complications, current clinical guidelines and recommendations
  - b. Rare or uncommon condition: definition

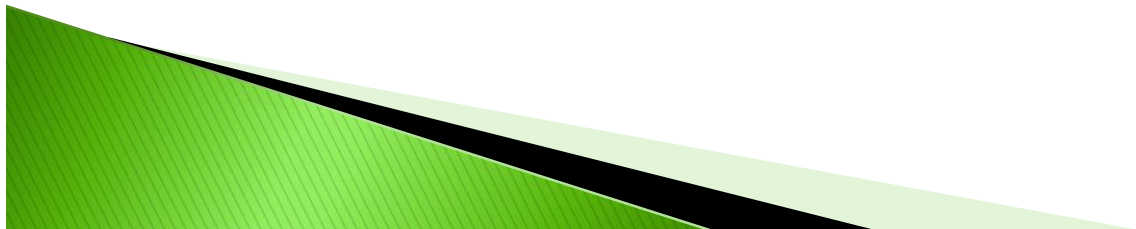
End with:

Key limitation or areas of need, your question, aim of your study, 2 lines on your study design and your study population.



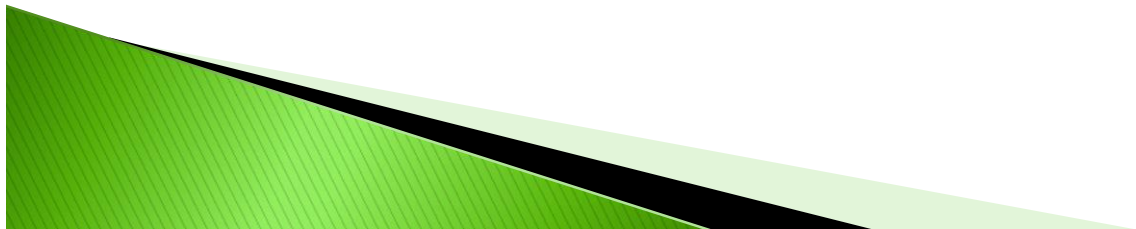
# Key steps in conducting medical research

- Answers relevant questions
  - ✓ Public health problem: Important?
  - ✓ Study question: relevant to the problem?
  - ✓ Objectives: consistent with the study question?
  - ✓ Study design: achieves objectives?
  - ✓ Your sample is representative?
  - ✓ Power of the study: sufficient?
  - ✓ Public health impact of the findings?



# Plagiarism

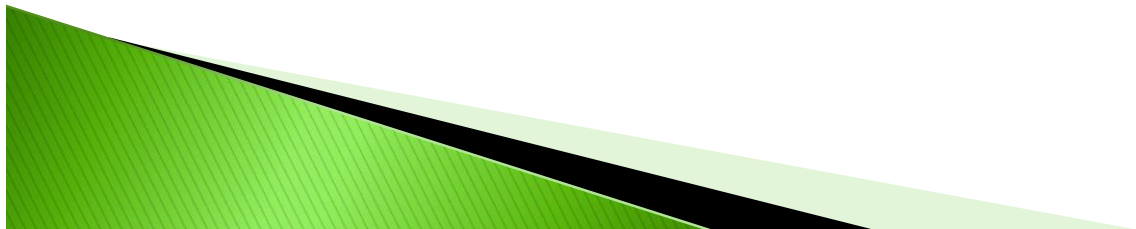
- ▶ Plagiarism is using others' ideas and words without clearly acknowledging the source of that information.
- ▶ To avoid plagiarism, you must give credit whenever you use
  - another person's idea, opinion, or theory;
  - any facts, statistics, graphs, drawings—any pieces of information—that are not common knowledge;
  - quotations of another person's actual spoken or written words; or
  - paraphrase of another person's spoken or written words.



# Plagiarism

## ► Strategies for Avoiding Plagiarism

1. Put in **quotations** everything that comes directly from the text especially when taking notes.
2. **Paraphrase**, but be sure you are not just rearranging or replacing a few words.
3. **Check your paraphrase** against the original text to be sure you have not accidentally used the same phrases or words, and that the information is accurate.



# Plagiarism

## Terms You Need to Know

- ▶ **Common knowledge:** facts that can be found in numerous places and are likely to be known by a lot of people.
  - You do not need to document this fact.
  - However, you must document facts that are not generally known and ideas that interpret facts.
- ▶ **Quotation:** using someone's words. When you quote, place the passage you are using in quotation marks, and document the source according to a standard documentation style.
- ▶ **Paraphrase:** using someone's ideas, but putting them in your own words.
  - Although you use your own words to paraphrase, you must still acknowledge the source of the information.



# Set Research Objectives

The **research objective** is a statement which **clearly describes what the researcher(s) aims to achieve from a research.**

It should be **broken down between (1) a general objective and (2) specific objectives.**

Remember:

A good research needs to be both relevant AND methodologically sound!





The infographic consists of five vertical colored bars, each representing a criterion of the SMART goal-setting framework. From left to right: a dark blue bar for 'Specific', a light blue bar for 'Measurable', a green bar for 'Achievable', a purple bar for 'Relevant', and an orange bar for 'Time-bound'. Each bar features a large white letter in a circle at the top, the criterion name in underlined text, and a list of two key points in smaller text. The background at the bottom left has a green and black geometric pattern.

**S**

**Specific**

State what you'll do  
Use action words

**M**

**Measurable**

Provide a way to evaluate  
Use metrics or data targets

**A**

**Achievable**

Within your scope  
Possible to accomplish, attainable

**R**

**Relevant**

Makes sense within your job function  
Improves the business in some way

**T**

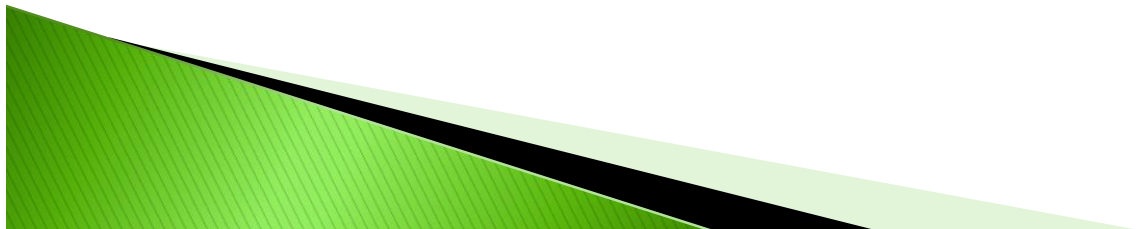
**Time-bound**

State when you'll get it done  
Be specific on date or timeframe

# Principal Investigator (PI):

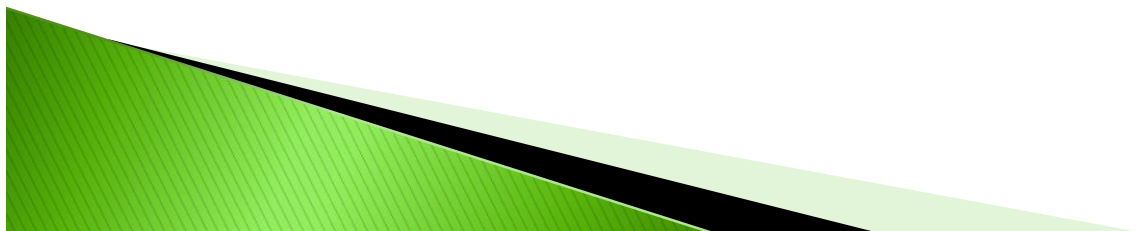
1. this is the person ultimately responsible for the research and overall project.

- ▶ He needs to ensure that the team members have the information, resources and training they need to conduct the research.
- ▶ He is also the final decision maker on any issues related to the project.
- ▶ Some projects have more than one PI, so the designated individuals are known as Co-Principal Investigators.
- ▶ PIs are also typically responsible for writing proposals and grant requests, and selecting the team members.
- ▶ They report to their employer, the funding organization, and other key stakeholders, including all legal as well as academic regulations.
- ▶ The final product of the research is the article, and the PI oversees the writing and publishing of articles to disseminate findings.



# 4. Biostatistician:

- ▶ This is the individual who analyzes any data collected during the project.
- ▶ Sometimes they just analyze and report the data, and other times they are more involved in the organization and analysis of the research throughout the entire study.
- ▶ Their primary role is to make sure that the project produces reliable and valid data, and significant data via analysis methodology, sample size, etc.
- ▶ The Statistician reports both to the Principal Investigator and the Research Director.
- ▶ Research teams may include people with different roles, such as clinical research specialists, interns, student researchers, lab technicians, grant administrators, and general administrative support staff.



# *3. Non-Author Contributors*

- ▶ Contributors who meet fewer than all 4 of the above criteria for authorship should not be listed as authors, but they should be acknowledged.
- ▶ Examples of activities that alone (without other contributions) do not qualify a contributor for authorship are acquisition of funding; general supervision of a research group or general administrative support; and writing assistance, technical editing, language editing, and proofreading.

