



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Research Question Development, Writing Background/Literature Review: Application

Shibani Ghosh



USAID
FROM THE AMERICAN PEOPLE



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Tufts
UNIVERSITY

Friedman School
of Nutrition Science
and Policy



OUTLINE

- Research Question Development
- Literature Review/Background
- Challenges in developing an appropriate research question include determining which uncertainties could or should be studied and rationalizing the need for their investigation (Farrugia et al, J can chir, Vol. 53, No 4, août 2010)



IMPORTANCE OF FORMULATING A RESEARCH QUESTION

- First and most important step
- Quality and relevance of the research relies on it
- Key to formulating the idea of what needs to be investigated
- The clearer the research question, the easier the next steps



A RESEARCH QUESTION

- Allow for the articulation/definition of a hypothesis statement, objectives
- Guide making decisions about study design, population and outcomes
- Will guide what data will be collected and analyzed
- Translates into results that are relevant for evidence-based practice.



Table 4.1 Aspects of a research problem

Aspects of a study	Information about	Study of	Importance to the study
Study population	People	Individuals, organisations, groups, communities	They provide you with the required information or you collect information from or about them
Subject area	Problem	Issues and problems facing a group of people; description of situations, associations, needs, attitudes; population profiles; service delivery process etc.	Information that you need to collect to find answers to your service research questions
	Programme	Contents, services provided, administrative structure, services outcomes, consumer satisfaction, profile of consumers, profile of service providers, effectiveness, cost benefit, etc.	
	Phenomenon	Cause and effect, relationships, the study of a phenomenon itself, etc.	



PICOT CRITERIA

Box 2. PICOT criteria¹

- | | | |
|----------|--|--|
| P | Population (patients) | • What specific patient population are you interested in? |
| I | Intervention (for intervention studies only) | • What is your investigational intervention? |
| C | Comparison group | • What is the main alternative to compare with the intervention? |
| O | Outcome of interest | • What do you intend to accomplish, measure, improve or affect? |
| T | Time | • What is the appropriate follow-up time to assess outcome |



PICOT APPROACH

- Helps generate a question that aids in constructing the framework of the study
- Helps protocol development by alluding to the inclusion and exclusion criteria
- Identify the population sub groups to be included.
Knowing the specific population of interest, intervention (and comparator) and outcome of interest may help identify an appropriate outcome measurement tool



PICOT APPROACH

- The more defined the population of interest, and more stringent the inclusion and exclusion criteria
the greater the effect on the interpretation and subsequent applicability and generalizability of the research findings
- A restricted study population (and exclusion criteria) may limit bias and increase the internal validity of the study;
may limit external validity of the study and, thus, the generalizability of the findings to the practical setting.
- Conversely, a broadly defined study population and inclusion criteria may be more representative but may increase bias and reduce the internal validity of the study.

PICO(O*) format:

Population/Problem : What is the target disease/disorder/condition and/or population (e.g., obese adolescents, women with vitamin d deficiency, elderly who have had hip fractures, etc.) ?

Intervention: What are you proposing to do to or for this particular population/problem (e.g., DASH diet, weight bearing exercises, bariatric surgery, taxes on sugar sweetened beverages)?

Comparison: Is there a comparison to the Intervention? If there is no comparison, you can leave this blank.

Outcome: What is it you seek to achieve or measure in the population/problem in terms of the Intervention? Is there a scale or measurement instrument that would quantify a change (e.g., Body Mass Index, Physical Activity Scale for the Elderly, Hb1AC, etc.)?

***Optimal Study design**: What study design is most appropriate to address the question you are asking? (e.g., Systematic Review/Meta-Analysis, Randomized Controlled Trial, Prospective Studies, Retrospective Studies, Longitudinal Studies, Case-Controlled Studies?)

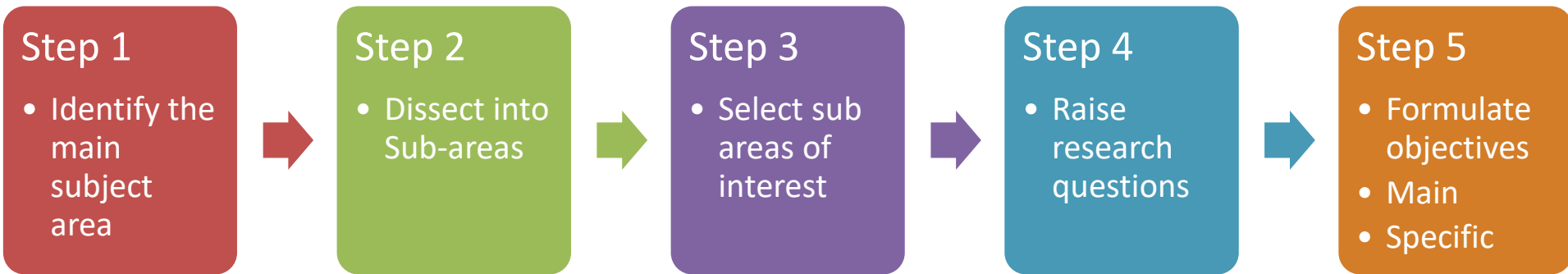
Population/Problem	AND	Intervention	AND	Comparison	AND	Outcome

List possible search terms for each PICO.

Population/Problem		Intervention		Comparison		Outcome
	AND		AND		AND	
OR		OR		OR		OR
OR		OR		OR		OR



STEPS TO DEFINE A RESEARCH QUESTION



Literature Review – handy for all the steps

Use PICOT or FINER approaches



HOW TO FORMULATE RESEARCH OBJECTIVES

- Goals that inform what will be achieved
- Main objective – overall statement
 - Describing the main focus
- Sub-objectives – specific aspects
 - Clear and unambiguous wording
 - Numerically listed
 - Each contains one aspect
 - Starts with action word: ‘to find out’, ‘to explore’



FIGURE 4.5 CHARACTERISTICS OF OBJECTIVES

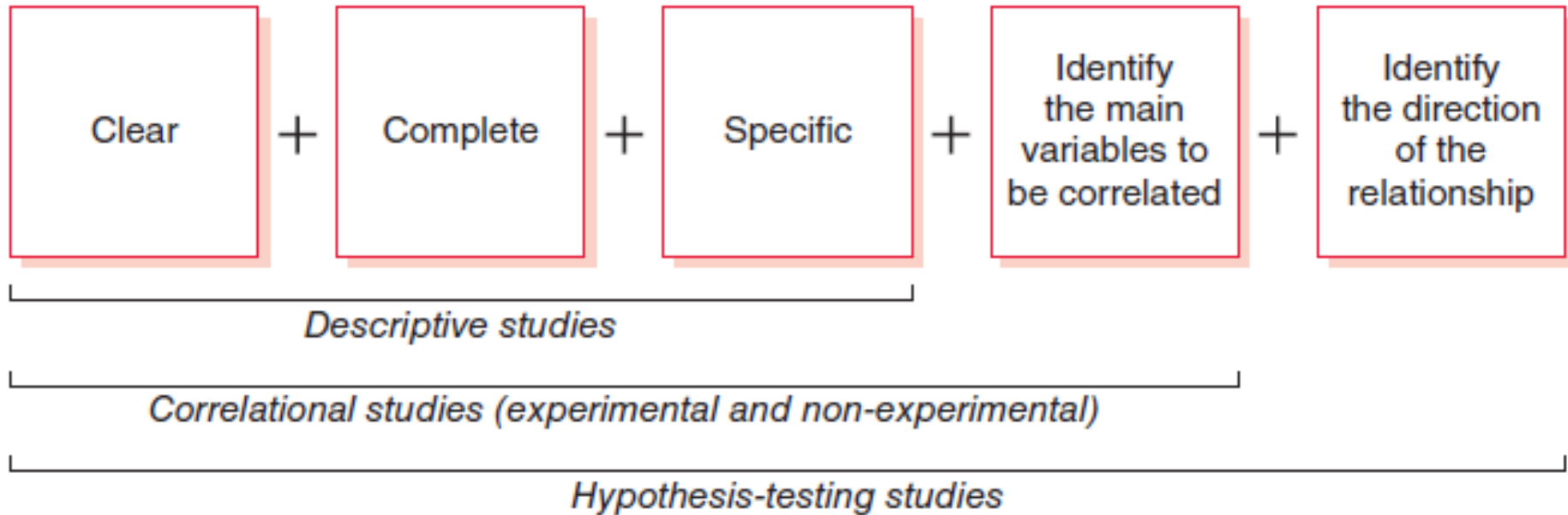


Figure 4.5 Characteristics of objectives



EXERCISE- DEFINE A RESEARCH QUESTION FOR AN INTERVENTION STUDY

- Break up into groups of three- four
- Use the PICOT or FINER approach
- Research Problem:
Stunting in Nepal
- Use the steps approach from Kumar and define a research question
- 15 min
- Discuss challenges and limitations



OUTCOMES

- The measures chosen to assess the impact of the interventions are called the *outcome* measures in the trial (or the trial *endpoints*)
- Defined at the time the trial/study is designed
- Should be specified in detail in the study protocol
- Compared between the different groups
- Measured in a consistent way during the course of the trial in the different groups.
- Clear definitions are also necessary, so that the measures can be replicated in other trials and meaningful comparisons made between trials.
- Failure to pay sufficient attention to the precise definition of outcome measures at the start of a trial may lead to confusion in interpreting the results or can even invalidate them.



TYPES OF OUTCOMES

- **Primary**
 - Most important
 - Determine design and sample size
 - Usually one primary outcome
 - Can have multiple- statistical considerations, cost considerations
- **Secondary and Tertiary**
 - These are usually additional
 - Not used to define sample size
 - But can guide future hypotheses and generate new questions



FUNCTION OF LITERATURE REVIEW

- A literature review is an integral part of the research process
- Providing a theoretical background to a study:

Bringing clarity and focus to the research problem

Improving research methodology

Broadening knowledge base in the research area of interest

Contextualizing findings by integrating with the existing body of knowledge



HOW TO REVIEW THE LITERATURE

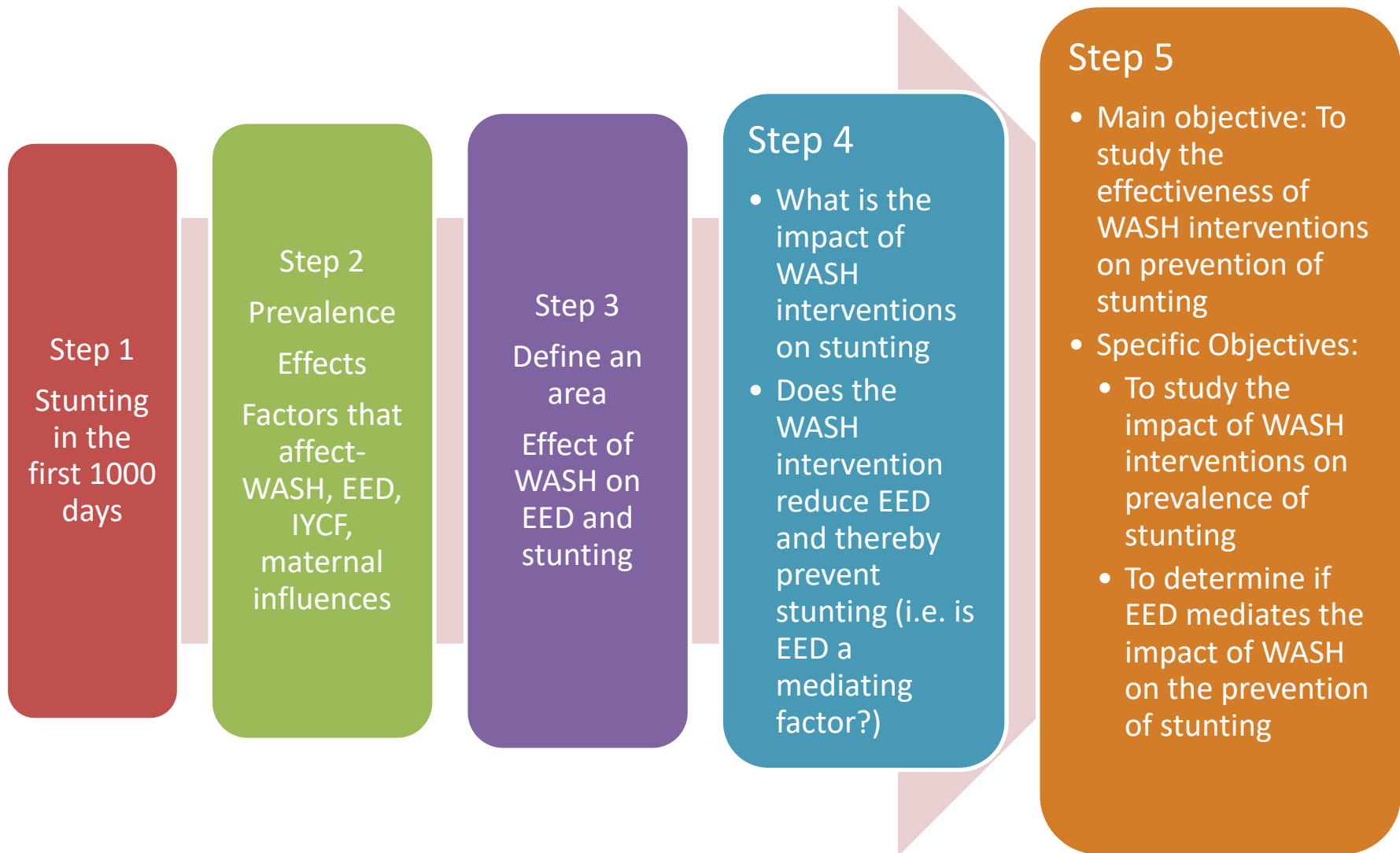
- Start with broad area of interest if research problem is not known and narrow down
- Focused around the research problem
 - What is already known in the area?
 - What is not known or what are the gaps in the existing body of knowledge?
 - What questions have remained unanswered?
 - Are there any areas of professional conflict?
 - What theories have been put forward relevant to the area of research?
 - What suggestions have been made for further research?
 - What research strategies have been employed by others undertaking similar research?



WRITING A LITERATURE REVIEW

Write about the literature reviewed to provide a theoretical background and contextualise findings to existing body of literature:

- Thematic, logical order
- Describe various theories
- Specify gaps in the existing knowledge area (supporting evidence)
- Present findings that may contradict existing knowledge gap
- Write about recent advances in the area of study
- State current trends
- Refine own methodology
- Quote findings from existing studies- use academic referencing style





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