

RESEARCH PROPOSAL WRITING

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▶ Outlines

- ▶ What is research proposal?
- ▶ Components of research proposal
- ▶ Identifying research topic
- ▶ Criteria for identifying research topic
- ▶ Write up of each section of the proposal

What is research proposal?

- ▶ Proposal is a document which sets out your ideas in an easily understandable way
- ▶ Detailed **plan of study** that indicates a specific course of actions to be followed in research processes
- ▶ Research proposal is **blue print** that guide research work
- ▶ Guiding document in scientific investigation
- ▶ Document that presents a plan of your project to the reviewers for evaluation

Purpose of research proposal

- ▶ The purposes of research proposal are to describe;
 - ✓ What you will do ?
 - ✓ Why it should be done ?
 - ✓ How you will do it ?
 - ✓ What you expect will result ?

Writing a research proposal

- ▶ **Some basic points to note in writing research proposal,**
 - ✓ **Readers:** The level of readers' technical ability, their interest in the project, ability to understand
 - ✓ **Adherence to study objectives:** It should focus on research objectives to be accomplished
 - ✓ **Easy to understand:** The most basic characteristic of a good proposal is that it is easy to understand

Writing a research . . .

- ✓ **Selective:** Should be selective in deciding what should be included in the document
- ✓ **Concise:** A proposal should be concise
- ✓ **Presentation:** The proposal should be prepared with formatting
- ✓ **Visual aids:** Should be reinforced with tables, graphs, pictures, maps, and other visual devices

Components of research proposal

- ▶ The basic components of a research proposal are the same in many fields
- ▶ However, how they are phrased and staged may vary by discipline
- ▶ The following components can be regarded as steps in the writing of the research proposal
- ▶ They have to logically appear in a proposal

Components . . .

► **The first Sections of research proposal**

- ✓ Title page
- ✓ Summary
- ✓ Acknowledgements
- ✓ Table of contents
- ✓ List of tables, figures (optional)
- ✓ List of abbreviations (optional)
- ✓ Acronyms/Abbreviations

Components . . .

► **The second sections of research proposal**

- ✓ Introduction(Background, Statement of the problem, Significance of the study)
- ✓ Literature review
- ✓ Objective (General & Specific objectives)
- ✓ Methods and materials(Study area & period, design, popⁿ, Eligibility Criteria (if any), Sample size, Sampling tech, Variables, Operational defⁿs, data collection tech., data quality assurance, data analysis & Ethical consideration)
- ✓ Work plan
- ✓ Budget plan
- ✓ References
- ✓ Result, Discussion, Conclusion, Recommendations, . . .

Component . . .

► **The third sections of research proposal**

✓ Appendices/Annexes

- Questionnaire,
- consent form and information sheet,
- Laboratory procedures

Title page of proposal

► The common and basic components of a title page are,

- ✓ Research title
- ✓ Name of investigators,
- ✓ Name of department/faculty/college,
- ✓ Name of your advisor(s) and
- ✓ Finally date of delivery of proposal and address

1. Title

- Identification of research topic is the first and most crucial step in the research process
- Remember that the title will be read by **thousands of people**
- Perhaps few people will read the **entire paper**
- All words in the title should be chosen with great care

1. Title . . .

- A good title is defined as the fewest possible words that can adequately describe the contents of the study (not too short or too long)
- Long titles are often less meaningful than short ones
- It should make the central objectives of the study clear to the reader
- Attractive titles may increase utility/more readable

Title . . .

- Words such as “**Studies on**”, “**Investigations on**” “**Assessment**” & “**Observations on**” are waste words
- Title is a **label, it is not a sentence** /**what, whom, where, when/**
- Titles should never contain **abbreviations/acronym**
- **Re-write research title after conceptualization**
 - ✓ It should make the central objectives of the study clear to the reader
 - ✓ Attractive titles may increase utility/more readable

Research title . . .

- ▶ Advised to incorporate:
 - ✓ Population to be investigated
 - ✓ The substance/issue of the research
 - ✓ Study area
 - ✓ Time of the research(optional)
 - ✓ Study design(optional)
 - ✓ Method of analysis (optional)

Assignment

- ▶ Identify 3 research areas (4 Ps)
- ▶ Rephrase the titles to be researchable title
- ▶ One will be selected so that you develop proposal

2. Summary/Abstract

- It is **a mini version** of the proposal/paper
- A concise summary of materials presented in the proposal
- It appears at the front pages but **written last**
- These materials are condensed to **a page or less** (< 350 words)
- Summary should never give any information or conclusion that is not stated in the paper
- **Reference** to the literature must not be cited in summary/abstract

Summary/Abstract . . .

- ▶ Do not put;
 - ✓ Information in the abstract that is not in the main text of your research proposal
 - ✓ Abbreviations or acronyms
 - ✓ References, figures, or tables in the abstract

Contents of Summary

- ▶ **Introduction:** [Describe briefly the background information, the problem statement and the rationale for conducting this particular study; why is it important to study now and in the proposed area/setting]
- ▶ **Objectives:** [Main objective of the study]
- ▶ **Method:** [Briefly describe the study design, study setting, sample size determination, sampling, data collection and analysis plan]
- ▶ **Work plan:** [Describe the duration of the study period]
- ▶ **Budget plan:** [Describe the estimated budget of the study project]
- ▶ **Keywords:** ≤ 5 words from the title, used for searching

Acronyms/Abbreviations

- ▶ **What is the difference between Acronyms/Abbreviations ?**

**Eg. WHO (World health organization)-
acronym**

Hgb (hemoglobin-abbreviation)

- ▶ **Use common Acronyms/Abbreviations**
- ▶ **Arrange in Alphabetical order**

► **Introduction**

1. Introduction Section

- Group work

- ✓ Discuss the purpose of introduction section of proposal
- ✓ Discuss Basic message to be conveyed in background section
- ✓ Discuss Basic message to be conveyed in statement of the problem
- ✓ Discuss basic message documented in significance section of research paper

1. Introduction

- Writing introduction section is among difficult step in research work /involve literature/
- Especially, stating the problem & identifying the question to be answered is very difficult
- Clear introduction (starting from the world to the study locality) shows
 - ✓ Basic background/baseline information
 - ✓ Magnitude/prevalence of problem/outcome of interest
 - ✓ Effects/consequences of the problem
 - ✓ Means of prevention or control
 - ✓ Factors associated/causes of the problem to be studied

1. Introduction . . .

- It starts with a broad basis and then narrows down to your particular field of study (**inverted pyramid**)
- This section should convince the readers about the relevance of the study (nature, scope/magnitude, severity of the problem, ...)

1. Introduction . . .

- It should also provide the d/nt factors influencing the problem and the context in which it occurs
- It should further illustrate why the problem is important, not only in your own working area but probably also beyond
- **Three essential parts of a good introduction are:**
 - ✓ Background information
 - ✓ Problem statement
 - ✓ Significance of the study

1.1. Background Information

- ✎ Concise description of the nature of the problem:
 - *Definition and baseline description of the problem*
 - *Magnitude & Distribution (who, where, when) . . . background statistics*
- ✎ Update background knowledge/information of reader
- ✎ Build logical argument leading to research question
- ✎ Start with **general** information and end with **specific** information
- ✎ Ensure each section flows **logically** from the previous one

1.2. Statement of the Problem

☞ This section systematically elucidate why the proposed research should be undertaken:

- Severity & consequences of the problem under study
- Factors contributing for problem to occur
- Provide **convincing argument** that available k/ge is insufficient to solve the problem under study

☞ Determine whether a Problem Should Be Researched



It is summarized by stating a **gap** b/n the

Statement . . .

- ▶ **A clear statement of the problem is,**
- **Foundation** for further development of the research proposal (research objectives, methods and material, work plan, etc)
- Makes it easier to find information and reports of similar studies from which your own study design can benefit
- Enables researchers to systematically point out why **“a question well-stated is a question half-answered”, but a question that is poorly stated or unstated is unlikely to be answered at all”**

1.3. Significance of the study

- ▶ What do you hope to achieve with a study results?
(Explain by your own words)
- ▶ Identify & list the possible beneficiaries of a research & describe specific benefit for each stakeholder
- ▶ Possible beneficiaries of research
 - FMoH, Regional health bureau, zonal and district health office
 - Other NGO/s
 - Community/study participant
 - Health workers
 - Researchers, etc

Tips in writing introduction/other literature

- Do not copy literatures as it is from articles, rather synthesize ideas
- More than 10% similarity is considered plagiarism
- Synthesize paragraph from 2-3 articles (avoid under/over citation)
- Paragraph must be not too long or too short (4-7 sentence in average)
- A Paragraph pinpoint one idea
- Check for grammatical errors

2. Literature Review

Literature Review

- ▶ Essential preliminary task in order to enrich yourself with the *available body of knowledge* in your area of interest
- ▶ It is a survey of important *articles, books, guidelines and other* sources pertaining to your research topic
- ▶ It is an integral part of entire research process and makes valuable contribution to every operational step

Literature Review . . .

- ▶ It can be time-consuming, daunting and frustrating, but is also rewarding
- ▶ It help to contextualize or frame your research process
- ▶ It will also give readers the necessary knowledge to understand your research

Literature Review . . .

► Its functions are:

A. Bring clarity and focus to your research problem more /learn the **gaps** in the area of study/

B. Improve your methods - learn various **techniques/approaches/methods** that others used

C. Broaden your knowledge

D. Contextualize your findings

E. Avoid **duplication** of information

Bring clarity and focus to your research problem

- ▶ Helps you to understand the subject area better
- ▶ It helps you to conceptualize your research problem clearly and precisely
- ▶ It also helps you to understand the r/sh b/n your research problem and the body of knowledge in the area

Improve your methodology

- ▶ A literature review tells you if others have used procedures and methods similar to the ones that you are proposing,
- ▶ Which procedures and methods have worked well for them, and 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
- ▶ Forecast **challenges** that might be faced in the conduct of study

Broaden 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

Contextualize your findings

- ▶ How do answers to your research questions compare with what others have found?
- ▶ What contribution have you been able to make into the existing body of knowledge?
- ▶ How are your findings different from those of others?
- ▶ For you to be able to answer these questions, you need to go back to your literature review
- ▶ It is important to place your findings in the context of what is already known in your field of enquiry

Sources of literatures

- Individuals, groups, & organization
- Library (published information)-books, journals, Abstracts, published report, etc
- Electronic search engines:- such as **medline, pubmed, google scholar, hinari, Endnote and popline, (internet)**

Procedure for reviewing the literature

- ① Search for existing literature in your area of study
- ② Review the literature selected
- ③ Develop a theoretical framework
- ④ Develop a conceptual framework

Search for existing literature:

- ▶ It is imperative/important that you have in mind at least some idea of broad subject area you wish to investigate,
- ▶ Next compile a bibliography for this broad area
- ▶ Sources are:
 - 1. Books
 - 2. Journals

Writing up the literature . . .

- Include:
 - Information directly relevant to your study
 - Detailed account of subject matter you want to research
 - Entertain **confounding factors** & other related matter only pertaining to the current research
- Avoid repetitions & lengthy statements (concise)
- Avoid in duplication
- Learn the gaps & various methods used
 - ✓ An opportunity to **develop professional confidence** in the field of study!!! (**3-5** pages)

Literature write up Approaches

Decide the order (organize flow of literatures)

- ✓ From **broad**er to **specific** (*WHO , UN, etc report to specific research articles*)
- ✓ From **global** to **local** (*Europa---Africa----Ethiopia----Oromia*)
- ✓ From **past** to **present** (*articles published in 2010, then to 2011*)

▪ Writing literature review should be either **synthesis** or **analytic**

- ✓ **Synthesis** (*constructing sentences from existing sentences adding/merging*)

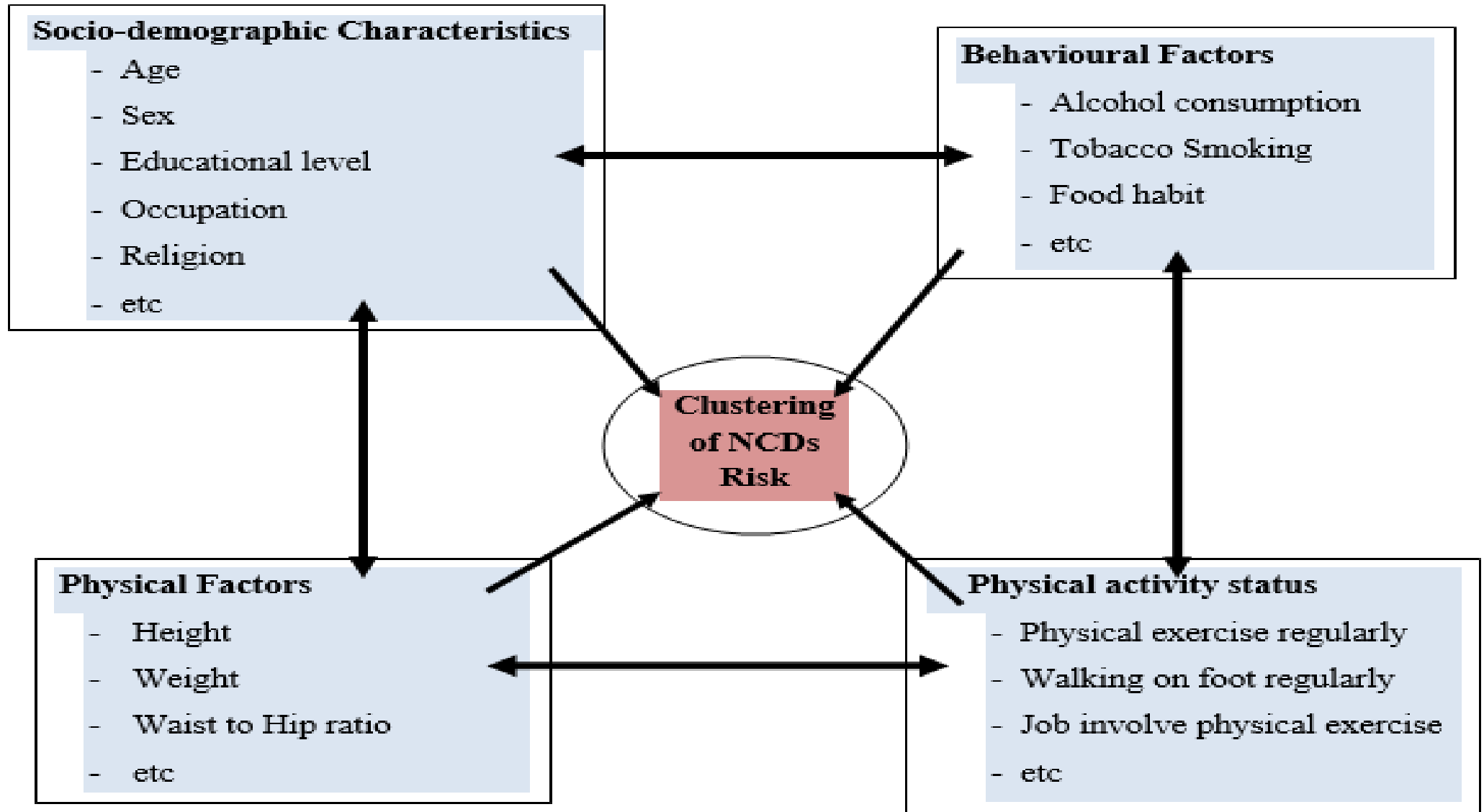
Conceptual framework

Conceptual framework- *frame that show relationship b/n dependent and IDV*

- Variables/factors
 - ***Dependent***
 - ***Independent- proximate or distal***
- Direction of arrow/type of arrow
----->
- Source
- Optional

Example conceptual framework

- Conceptual framework to study clustering of NCD risk



► **3. Formulation of Research Objectives**

3. Formulation of Research objective

- Objectives should be closely related **to title and statement of the problem**
- For example, if the problem identified is anemia among adolescent girls, the general objective of the study could be
 - ▶ ***“To assess magnitude and factors associated to anemia among adolescents girls in xxx district from Jan 01-20/2019”*”**
- If we break down this general objective into smaller and logically connected parts, then we get specific objectives

3. Formulation of Research Objectives . . .

▪ General Objectives

- ✓ Indicate the general purpose of the study
- ✓ Summarizes what is to be achieved by the study
- ✓ Must be congruent to research **title**
- ✓ Should be clearly related to the **statement of the problem**
- ✓ Use general action verbs like **Assess, Investigate,**

3. Formulation of Research Objectives . . .

- **Specific Objectives**

- ✓ Measurable statements on the specific questions to be answered
- ✓ Unlike the general objectives, the specific objectives are more specific and are related to the research ***problem situation***
- ✓ Indicate the ***variable to be examined and measured /guided by conceptual framework/***
- ✓ ***SMART criteria*** - Specific, Measurable, Achievable, Realistic & Time specific
 - ▶ ***“To determine magnitude of anemia among adolescents girls in xxx district from Jan 01-20/2010”***

▪ **Specific Objectives . . .**

✓ Logically connected parts of the general objective

✓ Direct the design of investigation

✓ Orient data collection, analysis & interpretation

✓ Use specific measurable words

- **Determine**
Establish

- **Verify**

- **Identify**

-

- **Describe**
Assess

- **Calculate**

- **Compare**

-

✓ Try to avoid Non-action verbs

- **To appreciate**

- **To understand**

- **To show**

- **To share**

- **To believe**

- **To study**

3. Formulation of research objectives

- **Objectives help to:**

- ✓ Focus the study (narrowing it down to essentials)
- ✓ Avoid collection of data that are not necessary to solve the identified problem
- ✓ Organize the study in clearly defined parts
- ✓ Guide step by step analysis
(methods/procedures, variables and statistical models used)

3. Formulation of Research Objectives . . .

Example

General Objective

- To assess magnitude of precancerous cervical lesions and associated factors among women 15 to 49 years of age in AHMC Hospital from March 1- September 30/2016

Specific Objectives

- To determine magnitude of precancerous cervical lesions among women 30 to 49 years of age in AHMC from March 1 - September 30/2016
- To Identify factors associated with precancerous cervical lesions among women 15 to 64 years of age in AHMC from March 1 - September 30/2016

Objective should be SMART

- ▶ **Specific:** A specific objective clearly defines what needs to be accomplished. It answers the questions of **who, what, where, when, why, and how.**
- ▶ It should be focused and well-defined.
- ▶ For example, instead of stating a vague objective like "Improve customer satisfaction," a specific objective would be "Increase customer satisfaction ratings by 10% within the next quarter."

SMART---

- ▶ **Measurable:** A measurable objective allows progress to be tracked and evaluated.
- ▶ It includes specific criteria or metrics that can be quantified. This helps to determine whether the objective has been achieved.
- ▶ For example, a measurable objective could be "Increase sales revenue by \$100,000 by the end of the fiscal year."

SMART---

- ▶ **Achievable:** An achievable objective is realistic and attainable given the available resources, time, and constraints.
- ▶ It should be challenging but within reach.
- ▶ For example, setting an objective to "Increase website traffic by 500% in one month" may not be achievable, but setting an objective to "Increase website traffic by 20% in three months" is more realistic.

SMART---

- ▶ **Relevant:** A relevant objective is aligned with the overall goals and objectives of the research or project.
- ▶ It should be meaningful and contribute to the desired outcomes.
- ▶ For example, if the research project aims to improve public health, a relevant objective could be "Reduce the incidence of smoking among teenagers by 20% within the next year."

SMART---

- ▶ **Time-bound:** A time-bound objective has a specific timeline or deadline for completion.
- ▶ It provides a sense of urgency and helps to keep the research or project on track.
- ▶ For example, a time-bound objective could be "Launch a new product by the end of the second quarter."

Worked examples

- ▶ **Research Objective:** To investigate the impact of exercise on mental health in college students.
- ▶ **SMART Objective:** Conduct a survey among 500 college students within the next six months to assess the relationship between exercise frequency and mental health scores, with the aim of identifying whether regular exercise is associated with improved mental well-being.

Worked---

- ▶ **Specific:** The objective clearly defines the purpose of the research and the target population.
- ▶ **Measurable:** The objective involves conducting a survey and collecting data on exercise frequency and mental health scores.
- ▶ **Achievable:** The objective is feasible within the given timeframe and resources.
- ▶ **Relevant:** The objective aligns with the research topic and aims to explore the impact of exercise on mental health.
- ▶ **Time-bound:** The objective has a specific timeline of six months for completing the survey.

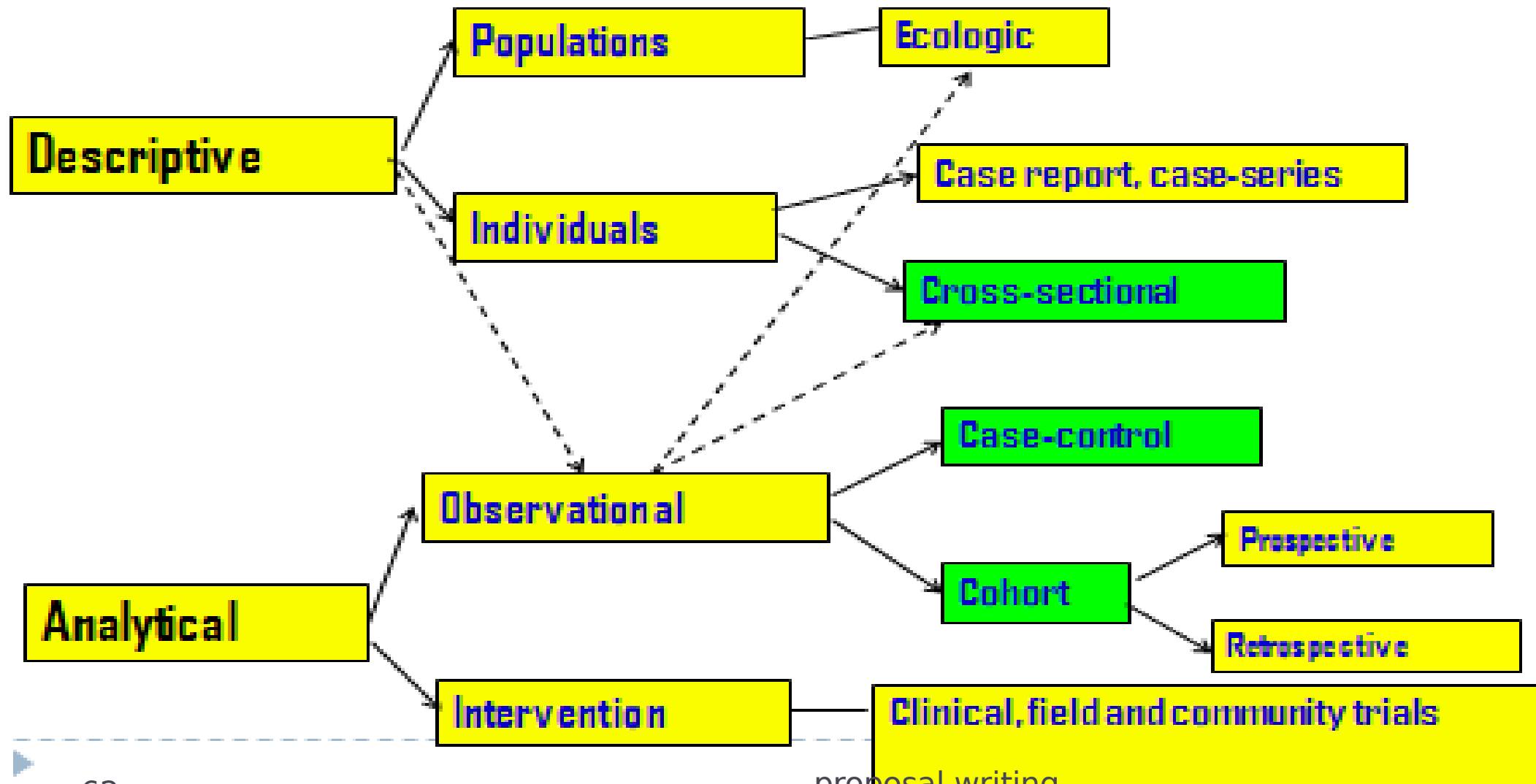
Methods and Materials

6. Methods and Material

- Study area & Period?
- What is the choice of the **study design** ?
- What would be the study **population**?
- What would be the required **size of the study subjects**?
- How would the study subjects **selected/sampled**?
- **Variables and Operational definitions** of crucial concepts
- **Data collection**: What, How, Who, Where, When?
- **Selection & training** of field workers/research staff
- **Data analysis**-Coding, entering, cleaning, storing, recording, choice of statistical methods
- **Field testing** of the research methods & tools
- **Supervision** & quality control

Methods ...

6.1. Choosing Appropriate Study Designs



Factors influencing choice of design

1. Type of research question

- “What will be the effect?” Future effect E.g. vaccine, smoking
- “What was the effect?” past
- Some body has lung cancer, why?
Retrospective or incident case

e.g. longitudinal observational research

Factors influencing choice of design . . .

2. Urgency of action- epidemic vs. cohort design???
3. Ethical consideration: How can you study homosexuals?
4. Resource availability: which design is needed ?
 - ▢ Minimum cost?
 - ▢ Maximum information?
 - ▢ Both?
 - ▢ Minimum number of cases available?

▶ **6.2. Populations**

- ▶ **Populations:-** is the entire group of individuals or objects that we want to study,
- ▶ **Sample:-** is a subset of the population that we actually observe and collect data from
- ▶ **Target Population:** The target population refers to the entire group of individuals or objects that the researcher wants to study and draw conclusions about
- ▶ . It represents the group of interest that the researcher aims to generalize the findings to.
- ▶ **Example:**
- ▶ **Research Question:** What is the average height of adult males in a specific city?
- ▶ **Target Population:** All adult males in the specific city.

Population---

- ▶ **Source Population:** The source population, also known as the accessible population, is a subset of the target population that the researcher has access to and can potentially sample from
- ▶ . It is the group from which the sample will be drawn
- ▶ **Example:**
- ▶ **Research Question:** What is the average height of adult males in a specific city?
- ▶ **Source Population:** All adult males living in the specific city..

Population---

- ▶ **The study or sampled population** refers to the specific group of individuals or objects that are selected from the source population to be included in the study
- ▶ It is the actual group from which data is collected.
- ▶ **Example:**
- ▶ **Research Question:** What is the average height of adult males in a specific city?
- ▶ **Study or Sampled Population:** A random sample of 500 adult males from the specific city.

Methods---

- ***Sampling frame:*** the list of potential from which the sample is drawn
- E.g Examples: A list of all registered voters in a state, a list of all students enrolled in a university, a list of all employees in a company, etc.
- ***Study subjects:*** the actual participants of the study
- ***Sample:*** Subjects who are selected

- ▶ **Study unit:** The basic unit of analysis in a study.
- ▶ Examples: A person, a household, a school, a city, a country, etc.
- ▶ **Sampling unit:** The unit selected from the sampling frame
- ▶ Examples: A voter, a student, an employee, etc.
- ▶ **Inclusion criteria** are the characteristics that participants must have to be included in the study
- ▶ Example: A study on the effects of a new drug on hypertension may include only participants with a blood pressure of 140/90 mmHg or higher.
- ▶ **Exclusion criteria** are the characteristics that disqualify participants from being included in the study
- ▶ Example: A study on the effects of a new drug on hypertension may exclude participants with a history of heart disease or liver problems.

Population Summary

- ▶ **Research Question:** What is the prevalence of depression in a specific age group?
- ▶ **Target Population:** All individuals in the specific age group.
- ▶ **Source Population:** All individuals in the specific age group living in a specific geographic area.
- ▶ **Study or Sampled Population:** A random sample of 1000 individuals from the specific age group living in the specific geographic area.
- ▶ **Study Unit:** Each individual selected from the sample.
- ▶ **Sampling Unit:** The list of all individuals in the specific age group living in the specific geographic area, as the researcher is selecting individuals

Methods . . .

6.3. Sample Size Determination

- Based on **precision** or **power**
- Based on the ***study design*** & ***sampling method***
 - ✓ P = proportion ***/magnitude of problem***
 - ✓ d = magnitude the change you want to be able to detect reliably (***margin of error***)
 - ✓ α = how sure you want to be that a change of the magnitude would have occurred by chance (***level of significance***)
 - ✓ $1 - \beta$ = how sure you want to be that you will observe a change of magnitude if it did in fact occur (***power***)

Sample size determination...

- Sample Size calculation
 - ✓ Single population **mean** or **proportion**
 - ✓ Double population- difference b/n **two means** or **Proportions**
 - ✓ Sample size for case-control study, cohort study, . . .

Sample Size to Estimate a Single Population Proportion

- If the main objective of the study is to estimate single population proportion, then the sample size can be determined using

$$n = \frac{Z_{\alpha/2}^2 P(1-P)}{d^2}$$

Where

n= is the minimum sample size required for very large population ($\geq 10,000$)

Z= is the critical value for a given confidence interval

P= is expected proportion of the event to be studied (to be estimated based findings of previous studies)

d= is margin of error (**Precision of the estimate**)

Sample Size to Estimate---

▶ Example---1

- ▶ Suppose that you are interested to know the proportion of infants who breastfed >18 months of age in a rural area. Suppose that in a similar area, the proportion (p) of breastfed infants was found to be 0.20. What sample size is required to estimate the true proportion within $\pm 3\%$ points with 95% confidence. Let $p=0.20$, $d=0.03$, $\alpha=5\%$

▶ Example--2

- ▶ A survey is planned to determine what proportion of the medical students have regularly chewed *khat*. If no estimate of p is available and a pilot sample cannot be drawn, what sample size would be required if a 95% confidence is desired, and $d=0.04$ is to be used

Sample size determination...

Sampling Techniques

1. Probability sampling

- Simple random sampling
- Stratified random sampling
- Systematic

2. Non-probability sampling

- Purposive/
Judgmental/
- Convenience/
Reliance/
- Consecutive
- Snow ball

Methods . . .

6.4. Variables & Operational Definitions

- A ***variable*** is a characteristic of a person, object or phenomenon that can take on different values expressed in numbers or categories

Types of variables

1. **Dependent/outcome/response** variable

- If one variable depends upon or is a consequence of the other variable it is termed as dependent variable

▶ E.g. behavioral change, that occurs as a

Variables . . .

2.Independent/exposure/predictor variable

- Used to measure determinants of a problem

The variable that is antecedent to the dependent variable

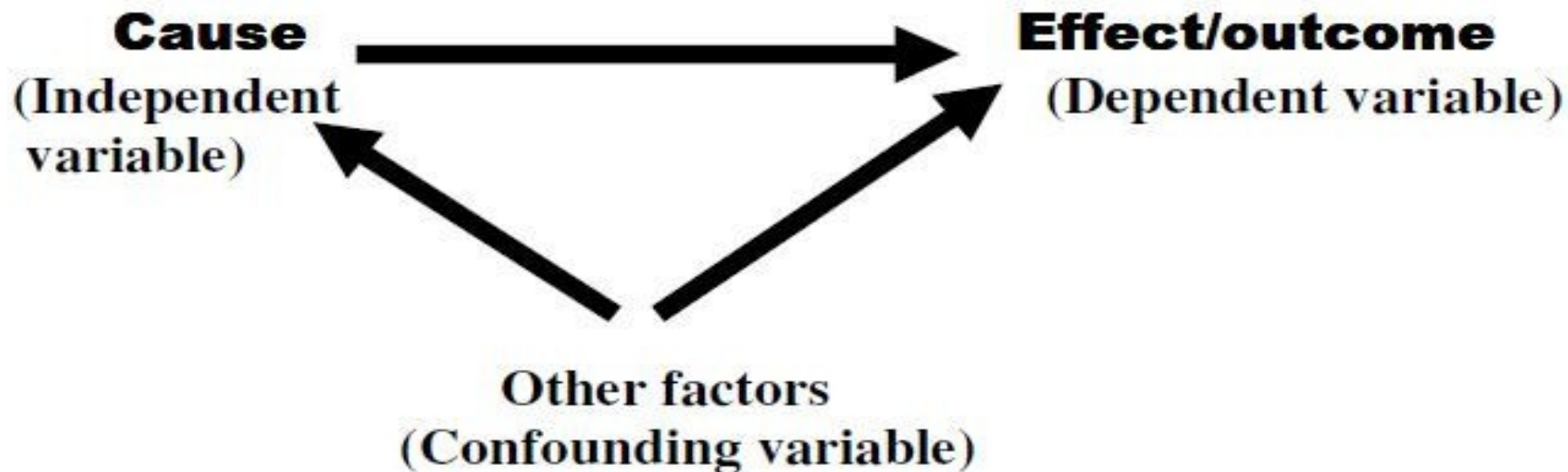
3.Confounding variable

- A variable associated with both the exposure & outcome
- When the dependent variable is not free from the influence of **extraneous variable** (s), the relationship b/n dependent & independent variable is said to be confounded by extraneous variable

← Cigarette smoking

Variables.....

- Explanatory/independent/factor/covariate
- Outcome/dependent



Methods . . .

6.5. Data Collection Techniques

- ✓ Using available information
- ✓ Observation
- ✓ Interview
- ✓ Administering written questionnaires
- ✓ FGD, Idepth Interview, and Other-measurements, tests...

Methods . . .

6.6.Data Management & Analysis

- Cleaning- before analysis usually using frequencies of each variables
- Analysis- manual or computers
 - ✓ Entry- SPSS, EPI INFO, STATA, Excel, FOXPRO, Etc
 - ✓ Descriptive- frequency, proportion, Summarization
 - ✓ Inferential- RR, OR, Chie-square
- Assumptions:
 - ✓ Normality
 - ✓ Multi-collinearity
 - ✓ Model selection- based on the type of **dependent variables, if:**
 - Continuous- Linear regression
 - Dichotomous/categorical- Logistic Regression
 - Time to an event- Cox-Regression

Methods . . .

6.7. Ethical Considerations in Research

- Ethics: the study of right & wrong – with the moral consequences of human actions
 - **General Principles**
 - ✓ Respect for persons- autonomy
 - ✓ Beneficence- *ACT IN THE BEST INTEREST OF OTHERS*
 - ✓ Non-maleficence- *DO NO HARM or EVIL ON OTHERS*
 - ✓ **How to organize and what real ethical consideration need to be included?**
 - ✓ Justice
 - Informed consent,
 - Confidentiality,
 - Communication of Study Results
-

Methods . . .

6.8. Plan for Dissemination & Utilization of Results

- Partial fulfilment
- Briefly describe the dissemination plan
 - ✓ Feedback to the community
 - ✓ Feedback to local communities
 - ✓ Identify relevant authorities that need to be informed
 - ✓ Scientific publication
 - ✓ Presentation in meetings/conferences
- Briefly describe how the study results can be best translated into application

7. Work Plan

- Work plan is a good starting point for executing activities & preparing budget for activities
- Plan had three important component
 - List of Activities
 - Responsible person
 - Time duration to accomplish task
- For **Plan of action:**
 - ✓ use GANT CHART (time table)

Example

Table 1: Tentative Work Plan

N0	Activity	Responsible Bodies	2018						
			Mar	Apr	May	Jun	Jul	Aug	Sep
1	Finalization of Research Proposal	Investigators							
2	Securing ethical clearance	Investigators							
3	Securing fund	Investigators							
4	Arranging logistics	Investigators							
5	Data collectors and supervisors training	Investigators							
6	Pre-test	Investigators and data collectors, s							
7	Data collection	Data collectors, Investigators							
8	Data entry and cleaning	Investigators and data managers							
9	Data analysis	Investigators and data managers							
13	Writing Manuscript for publication	Investigators							

proposal writing

8. Budget

- Clearly identify the resource requirements
- Be realistic in cost estimation/budgeting
- Prepare budget justification
- The required budget for:
 - Personnel
 - ✓ Perdiem (training, data collection....)
 - Materials & Stationeries
- Identify funding resources & prepare budget according to the required form

Example

SN	Activity Breakdown	Unit	Quant.	Payment per unit/day	No of days/items	Total cost	Remark
1	Training of Data collectors and supervisors						
a	Allowance of trainer on Data collection tool	Person	2	960	1	1,920	
b	Allowance of trainee	Person	14	200	1	2,800	
	Sub total					4,720	
2	Materials Cost						
a	Questioner Duplication	each	5	1	847	4,235	
b	Pen	each	1	5	50	250	
c	Pencil	each	1	2	50	100	
d	Eraser	each	1	2	12	24	
e	Notebook	each	1	20	12	240	
	Sub Total					4,849	
3	Data Collection Cost						
a	Supervisors' payment	Person	2	200	10	4,000	
c	Data collectors' payment	Per-quet	1	40	847	33,880	
						37,880	
4	Data entry, analysis and report writing						
a	Data entry clerk for double entry	Quest.	1	10	847	8,470	
b	Data cleaning and analysis	person	2	960	8	15,360	
c	Research report writing	person	2	960	8	15,360	
	Sub total					39,190	
	proposal writing						
	Total Cost					86,639	

9. References

- You always need to reference all the literature that you refer to in your review.
- **Vancouver system**- use consecutive numbers in the text to indicate references & list references at the end of the paper
- **Harvard system**- the references more fully in the text,
 - ✓ putting the surname of the author, year of publication & number (s) of page (s) referred to between brackets, e.g., (Shiva 1998:15-17).

10. Annexes

- Use annexes to indicate the necessary materials
 - ✓ Information sheet/informed consent
 - ✓ Questionnaires
 - ✓ Other procedures, . . .

Report Writing (Scientific study paper)

- ❖ **Research report writing, promoting utilization of findings**

Writing research result/report

Research reports need to:

- Have a logical and clear structure,
 - Be to the point, &
 - Use simple language & pleasant layout
- Before you start writing, it is therefore essential to group & review the data you have analyzed by **objective**
- ✓ Authors always have **objectivity, clarity & honesty** in reporting their research

Main components of a research report

- A research report include most components of proposal
- Some components change
 - ✓ Summary --- changed to **Abstract**
 - ✓ Methods section written in future tense changed to past tense /simple past/
- Some section eliminated from
 - ✓ Work plan
 - ✓ Budget plan
- Some components added to
 - ✓ Result
 - ✓ Discussion
 - ✓ Conclusion and recommendations

Writing the Methods Section

- Method section written in past tense
- A poorly written methods section is a major reason for rejection
- Includes all sub sections during proposal write up, but also incorporate changes/strengthen the existing write up is possible

Note,

- ✓ Replicability of results is the heart of science
- ✓ Describe techniques used in sufficient detail to allow others to replicate the study

5. Writing Research Finding/Results

- Plan your result write up based on **title and study objectives**
- Statistics should not take over the paper, but statistical analysis of important results should be adequately described
- Results should be presented in a **logical sequence** in the text, tables, & illustrations

=> **logical sequence of objective and variable chronological order**

Finding/Results....

- A good rule about whether to include figures or not is: **When in doubt, leave it out**
- **Tables:**
 - ✓ Can be used if there is a need to show association (3-4 tables)
 - ✓ Should stand alone, numbered, cited in text, exactly describe the content

Result outline should contain:

- Use main and sub-sections of the report,
- The points to be made in each section, &
- A list of tables, figures and/or quotes to illustrate each section

✓ ***The first section under findings is usually a description of the study popⁿ***

- Then, depending on the study design, you may provide more information on the problem you studied (**size, distribution, characteristics**)

Result writing

- Tables & Figures in the text need numbers & clear self explanatory titles
 - => 4 **wh** questions [**what, who, where, when**]
- Include only those tables & figures that present main findings & need more elaborate discussion in the text (**3-4 tables and 1-2 figures**)
- Note that, it is unnecessary to describe in detail a table that you include in the report
- Only present the main finding

6. Writing Discussion & Conclusions

- The findings can be discussed by logical order of **objective** or by cluster of related **variables or themes**, which should lead to conclusions & possible recommendations
- May include findings from other related studies that support or contradict your own
 - ✓ **1st** summarize what you found-**gives answers for the research question**
 - ✓ **2nd** compare to similar literatures; If your findings are d/nt, justify the reason for the d/c => ***Is it method, sample, setting or measurement differences?***

7. Conclusion & Recommendation

- Should have logical flow with discussion of the findings
- The conclusions should logically follow the same order to discussion points
- Conclusion is different from summary
- Conclusion is "A" is better than "B" for some kinds of patients, not presenting main finding again like summary
- **Conclusion is generalizing a finding compared to reference/other result**
- Three sentences are enough/only one

Recommendation...

- The recommendations should take into consideration the local characteristics of the health system, constraints, feasibility & usefulness of the proposed solutions
- Be summarized according to the groups towards which they are directed, for example:
 - ✓ Policy-makers, ...meta-analysis research
 - ✓ Health & health-related managers at district or lower level,
 - ✓ Health & health-related staff who could implement the activities,
 - ✓ Potential clients &

Strength and Limitation

- Something unique xics /strength/ of your study
=> opportunity, techniques, . .
- Limitation is different from challenge

Limitation: something can not be solved by investigator

Challenge: ups and downs that may lead to fatigue solved by researcher

- Include issues that affect generalizability & internal validity

▶ ✓ If you do not acknowledge the **limitations** of your report, the reviewers will be confused

Principle of Report Writing

- **Simplify**-Keep to the essentials
- **Justify**- Make no statement that is not based on facts & data
- **Quantify** when you have data to do so Avoid **large, small**; instead, say 50%, 1 in 3
- **Be precise & specific** in your phrasing of findings
- **Inform, not impress**. Avoid exaggeration (avoid words like, most, majority, ...)
- Use short sentences
- Be consistent in the **use of tenses** (past or present tense). Avoid the passive voice, if possible, as it creates vagueness (e.g., patients were interviewed.

8. Dissemination & Utilization of Research Findings

- Beneficiaries of research are not only the health professionals
- There is a need to promote & increase utilization of research results among all potential users, varying from community members to donor agencies
- Likelihood of research findings being used will increase if the following steps are taken:
 1. Develop & use a systematic dissemination & communication strategy for reaching different audiences of potential users
 2. Present results to all stakeholders & obtain feedback on findings & recommendations
 3. Develop plan of action to promote the

Strategy for Dissemination & Communication of Results

- Identify d/nt partners & their potential contributions for solving the problem
- Select appropriate information channels (report submission, presentation, publication, ...)
- Presenting the research results to d/nt stakeholders:
 - ✓ Make sure that sufficient time is allocated for the presentation & for discussion.
 - ✓ Arrange your presentation
 - ✓ Prepare appropriate visual aids
 - ✓ Discuss the findings & the logic & feasibility of the recommendations with different target groups

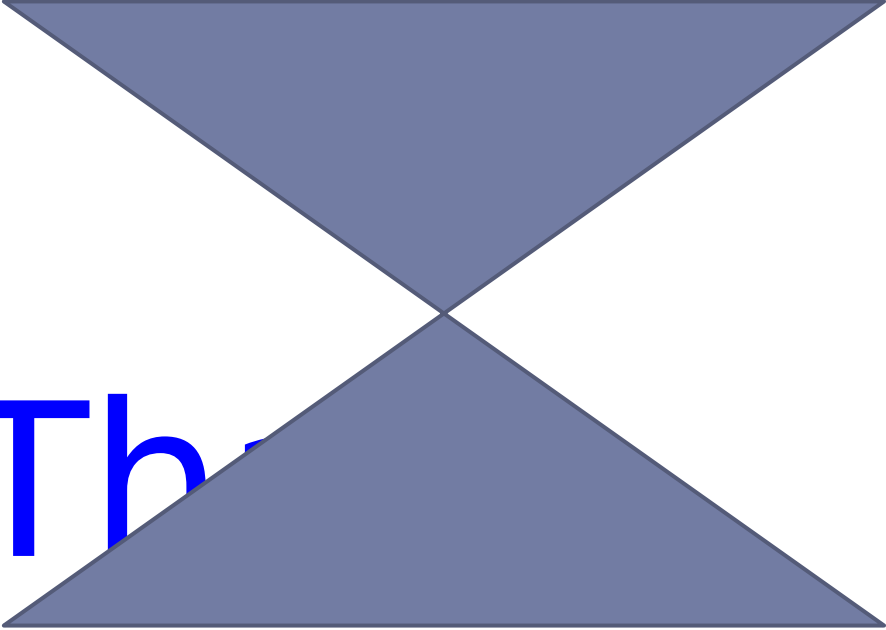
Summary

- To write a research paper:
 - ✓ Start with the outline/title, abstract, introduction, objective, method, result, discussion, .../

Elements	Length and Limits
Title	<12 words
Abstract	250–300 words
Introduction	600 words (3–4 paragraphs)
Methods	3–4 pages
Results	2–3 pages
Tables and figures	≤5 combined (see journal style)
Discussion	3–5 pages
References	<40 (see journal style)

Assignment

- ▶ Select title and develop proposal
- ▶ Collect University format to develop Proposal



Thank
you!