RESEARCH PROPOSAL WRITING

BY

Obsan Rorisa (BSc, MPH/RH.)

Sept, 2022

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, pop^{n}, Eligibility Criteria (if any), Sample size, Sampling tech, Variables, Operational def^{n}s, 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 definedas 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-abbriviation)

- **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 backgroud 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
- Use **transition words**, such as ‘furthermore’, ‘in

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 the proposed research undertaken and what you hope to achieve with the study results

"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 beneficieries of a research & describe specific benefit for each stakeholder
- Possible beneficieries 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)**
- Gray literature (Unpublished ones)

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 ***broader*** 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

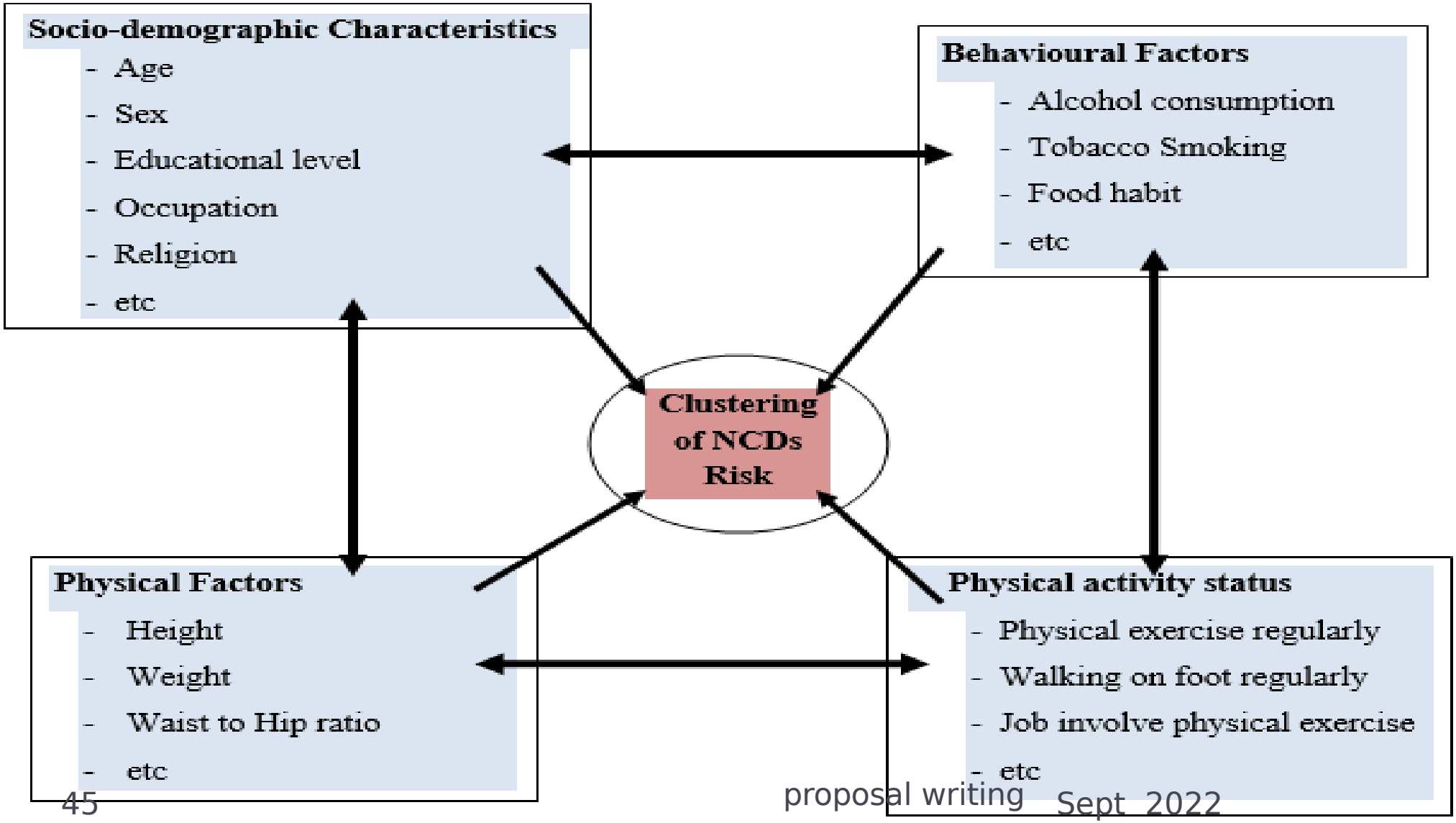
Conceptual framework- *frame that show relationship b/n dependent and IDV*

- 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 adolecent girls, the general objective of the study could be
  - ***"To assess magnitude and factors associated to anemia among adolecents 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 congrent 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 adolecents girls in xxx district from Jan 01-20/2019"***

- **Specific Objectives . . .**

√ Logically connected parts of the general objective

√ Direct the design of investigation

√ Orient data collection, analysis & interpretation

√ Use specific measurable words

- **Determine - Verify - Identify - Establish**
- **Describe - Calculate - Compare - Assess**

√ 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

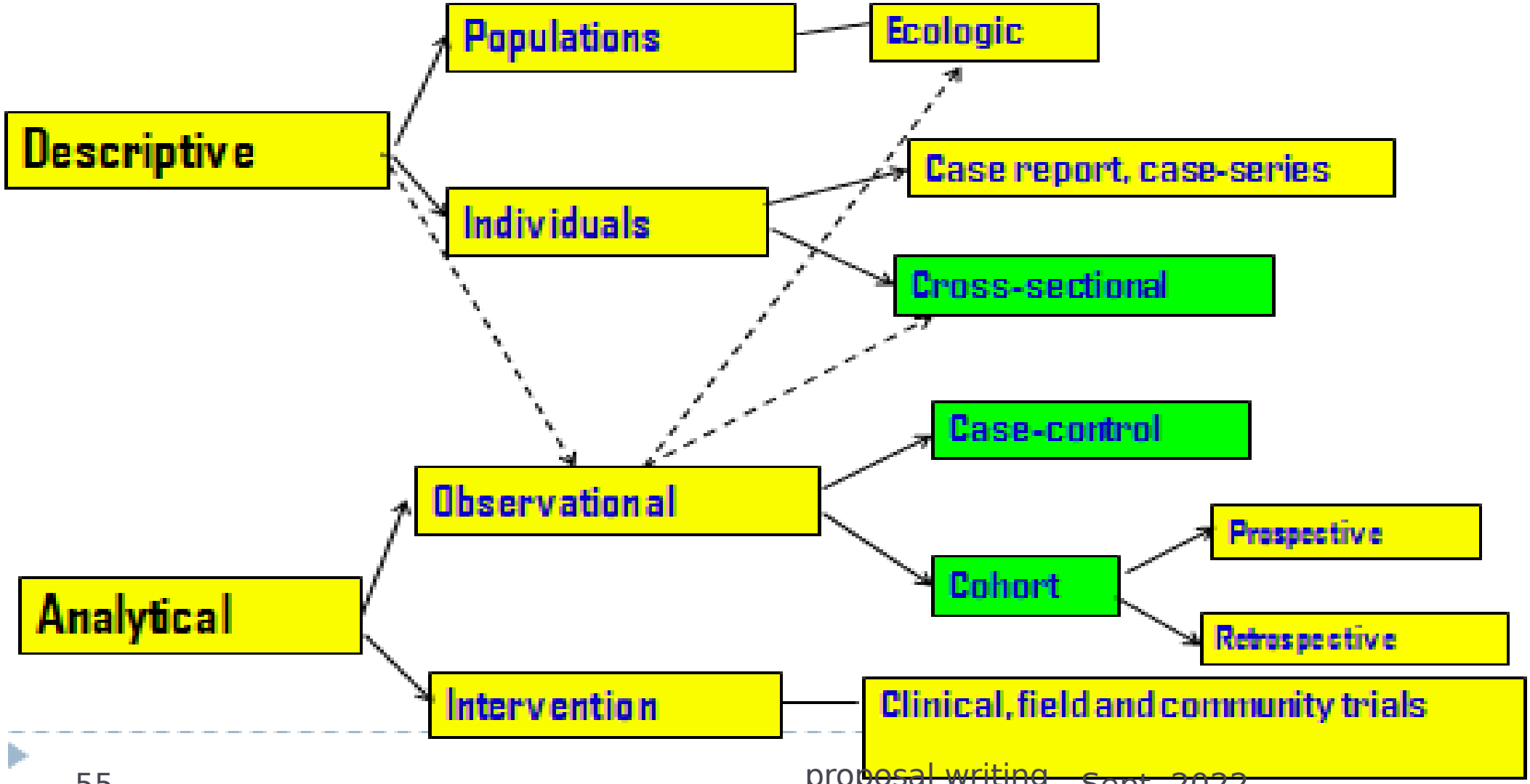
Methods and Materials

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?

Methods . . .

6.2. Populations

- ***Target population:*** the population to whom the results would be applied/generalized
- ***Source population:*** the population from whom study subjects would be obtained
- ***Sampling frame:*** the list of potential from which the sample is drawn
- ***Study subjects:*** the actual participants of the study
- ***Sample:*** Subjects who are selected

✓ **Describe inclusion and exclusion criteria**

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-ß=how sure you want to be that you will observe a change of magnitude if it did in fact occur ***(power)***
  - √ ***Response rate, loss to follow up***

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 usi

$$n = \frac{Z^2_{\alpha_{1/2}} P(1-P)}{d^2}$$

Where

n=is the minimum sample size required for very large population (≥100,000)

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 determination…

Sampling Techniques

1. Probability sampling
   - Simple random sampling
   - Stratified random sampling
   - Systematic random

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

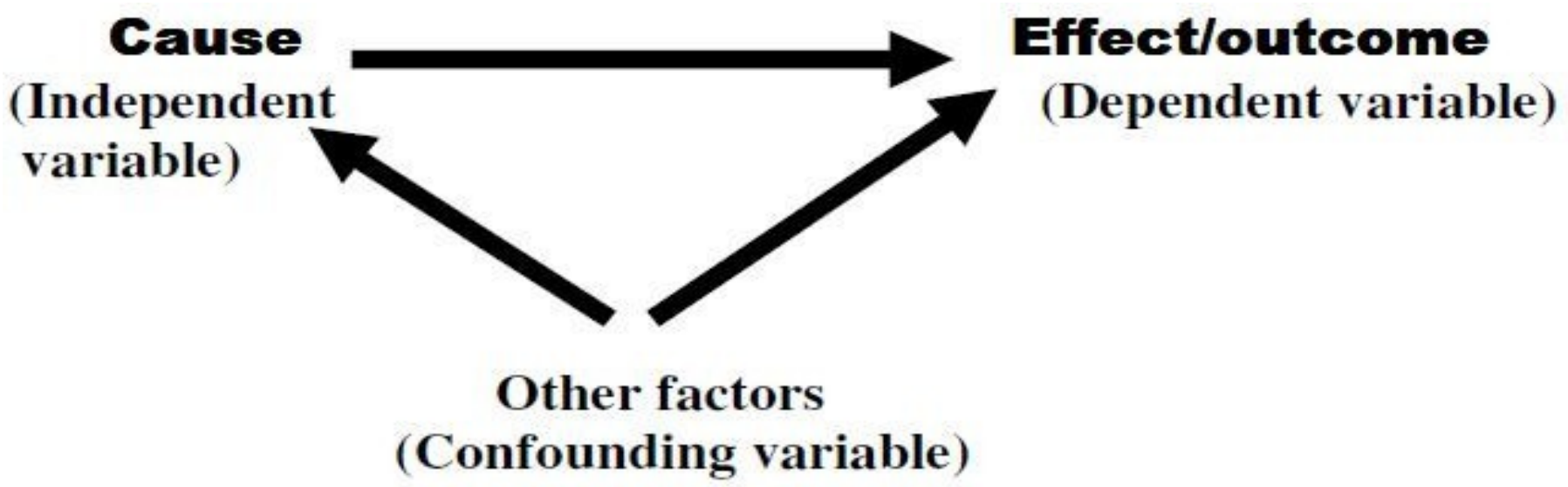
– A variable associated with both the exposure & outcome

- 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/covaraite
- 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-maleficience- *DO NO HARM or EVIL ON OTHERS*
  - √ Confidentiality
  - √ Justice

How to organize and what real ethical consideration need to be included?

- Informed consent,
- Confidentiality,
- Communication of Study Results
- Justice during sample selection

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							

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**	
	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).
  - ✓ the references at the end of the proposal

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/ce =>***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

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

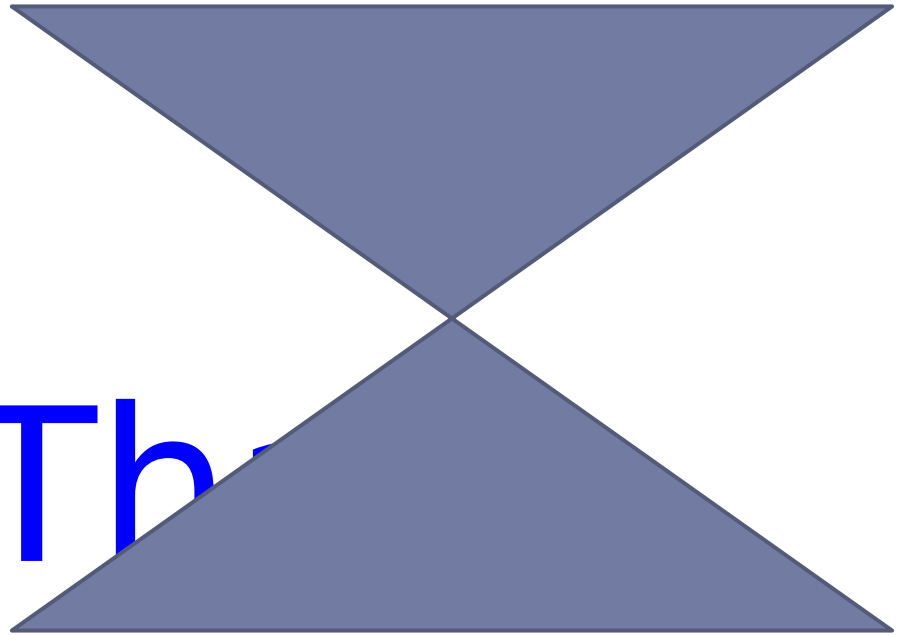
Summary

- 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



Th

you!