



Almajmaah University, College of Applied Medical Sciences

The Scientific Research Unit (2end Seminar)

Writing a Sound Scientific Research Proposal

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How to write a research proposal?

● Definition of research:

Research is systematic, **scientific and methodological** approach to search for **basic facts** related to a specific **problem** aiming to find solutions based on these facts.

- Research is not fishing in the dark. If you decided to go into a forest to see what is there or if you throw a net in the river to catch something, this is “**exploration**” and not research.
- You set out when doing research to answer a specific
- question using specific well known and tested methods.

How to write a research proposal?

- The research question drives the whole study.
- It is the question you want to solve.
- The question should be clear and focused.
- You can put forward a **tentative answer** (**hypothesis**)
 - which could guide you through.

● **Proposal framework:**

The proposal should include the following sections:

[1] Title.

[2] Introduction (background, statement of problem and rationale) followed by the objectives of the study.



How to write a research proposal?

[3] Objectives.

[4] Methodology (study design, study site, population, selection criteria, sample size, sampling technique, tools of data collection, ethical considerations and methods of data analysis).

[5] Organization (work plan and time frame).

[6] References and annexes.

[7] Budget.

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● **Selection of a topic:**

- The first step for one intending to do research is the selection of the research topic.
- The topic should be a priority problem that goes with the national priority research agenda or respond to the **Institute Research Plan (Majmaah University. Plan)**.
- The national priority problems are those affecting a **greater number** of people or a serious emerging problem being identified by managers or decision makers.
- The **originality** of the work is required unless there is a **gap** in the previous work.
- **Repetition** of work should be avoided as it results in wastage of time and resources.
- Feasibility, and applicability of research results should be considered.

How to write a research proposal?

- Preparing a research proposal:
- The initial step in designing a study is to write the research proposal.
- Proposal is a written document of the concept, programme and expenses of the research work. (**why do we write it?**).
- It serves as a basis of discussion with other experts involved in the work (e.g., academic supervisors, granting bodies, clinicians, statisticians (design) and administrators.
- Therefore, the style of writing should be clear, logical and direct in approach .

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- Before writing a research proposal one should be properly oriented by extensive reading about the topic (**reading is thought provoking**).
- Research without orientation is a waste of time, money and resources .
- How to write the different sections?

[1] Title (Title page):-

- a. It should be **accurate**, **informative** and free of **abbreviations**.
- b. It should contain the **key words** relevant to the proposal **objectives**.

[2] Introduction:-

This section (800 words, and 6-8 references) should include:

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- (1) **Statement of the problem.**
- (2) Brief background information about the problem (size).
- (3) Rationale (**Justification**).
 - Rationale indicates the background and events leading to the need of the study.
 - It is a “**sales document**” designed to convince the readers that the proposed work should be considered for **endorsement and support**.
 - Writing a good study rationale depends on preliminary readings on the topic (**Sources**).
 - How to do a computer search (Medline) or an internet search (**search engines**).
 - Search for review articles (**5-10 Recent**).

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- Avoid using too lengthy reviews as this results in that the reader can not find the **main message** of the work and then less convinced with it.
- The rationale should make clear how the problem is relevant to the national needs or the **Institute Research Plan. Majmaah University.**

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[3] Objectives:

- This is what to be achieved by the study.
- It should clearly define the question for which a solution is being sought.
- The proposal writer should consider the following:
 - (1) To be clearly related to the **statement** of the problem.
 - (2) To cover the different aspects of the problem.
 - (3) To be realistic considering local conditions and available resources.
 - (4) To use action verbs such as “to determine, to identify, to verify, to describe, to calculate”.



How to write a research proposal?

- Action verbs result in good phrases.

The most convincing **success criteria** involve the beneficiaries “customers” or response to **national** needs.



How to write a research proposal?

(5) To avoid vague non-action verbs “to study, to appreciate, to understand”

write a research proposal?

- Non-action verbs result in suspicious phrases like...
- “ To gain insight into...”
- “To develop the theory of...”
- “To study...”

The trouble with all of these is that they are **non-testable** or **quantifiable** statements and there is no way to distinguish failure from stunning success.

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The research **objectives** are classified into two:

- **General objectives (overall or strategic objective):** These will define what is expected to be achieved by the study in general terms.
- **Specific objectives (Detailed objectives):** Here the general objective is broken down into smaller and **logically connected** units to address the various aspects of the problem and the key factors expected to cause or influence the problem (operationalize the question into specific, **testable** questions or statements).
- In addition to objectives, a **hypothesis** can be formulated in some studies. A hypothesis is a **suggested explanation** for the research problem that can be tested. It is a prediction for a relationship between one or more factors.

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[4] Methodology:

- This documents how, where and when the research will be conducted and how best to analyze and interpret the results.
- It is the most detailed part of the proposal and includes:
 - i- study design.
 - ii- Study area.
 - iii- Study population.

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- iv- **Study tools (questionnaires, focus group discussions... etc).**
- v- **Sampling (technique, frame, size). The number of subjects/objects should be a key to the minimum necessity for valid results (calculation?).**
- sample size estimation is an important aspect of experimental design, because without these calculations, sample size may be too high or too low. If sample size is too **low**, the experiment will **lack the precision** to provide reliable answers to the questions it is investigating. If sample size is too **large**, time and resources will be wasted, often for minimal gain. The study should be cost effective.



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vi- Selection criteria (inclusion and exclusion criteria).

Vii- Analysis and presentation (enrichment?).

viii- Ethical consideration: An ethical research design is that which respect the autonomy of the subjects and cause no harm (human is a poor experimental subject).

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- Therefore, the researcher should address the following subjects:
 - a) Informed consent is needed for any study that involves human subjects.
 - a) Declaring if it has a conflict of interest.
 - a) Approval of your institute research board ([Majmaah un. Research board](#)) and the national ethics committee (NHL, FMOH).

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[5] Plan of work:

- The researcher has to set **a time** when the study is to commence, how long to last and whether it will be in stages (and if so, the **time schedule** for each part).
- The researcher should include a list of the names of all the collaborators in his work with their positions, consent and curriculum vitae.
- The researcher should show approval of the study place administrators.

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[6] Budget:-

- The budget of a research work is essentially a document of its expenses.
- Outline the capital and **running costs** together with the **hidden costs** (such as the use of already existing laboratories, libraries, computer and internet facilities and technical and secretarial help in addition to the cost of travel of researchers and subjects).
- A portion of the proposed budget should be reserved for unforeseen costs.

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- A fully itemized budget is necessary as the granting bodies require a detailed breakdown of the costs of the project.
- The **golden rule** not to ask for too much or too little. It is wise to find out in advance the “likely figure” a particular granting authority will allow for the type proposed (which provide a ceiling for the budget).

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[7] References:-

- A numbered list of recent references matching those cited in the text is needed (optimum number of 6-8).
- The Vancouver style is preferred in biomedical research.

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[8] Annexes:

- Detailed CV of the applicant.
- CV of the supervisor highlighting the professional experience and (5) recent publications of relevance to the proposed work.
- CVs of collaborators.
- A letter from supervisor to show his or her approval of the proposal.
- A copy of the informed consent of the study subjects.
- A letter from the study place administrator to show his consent.
- A copy of the study questionnaire.
- A copy of a detailed protocol in experimental studies.



**If you fail, never give up because
F.A.I.L. means "First Attempt In Learning"**


End is not the end, in fact

E.N.D. means "Effort Never Dies"

If you get No as an answer, Remember

N.O. means "Next Opportunity"

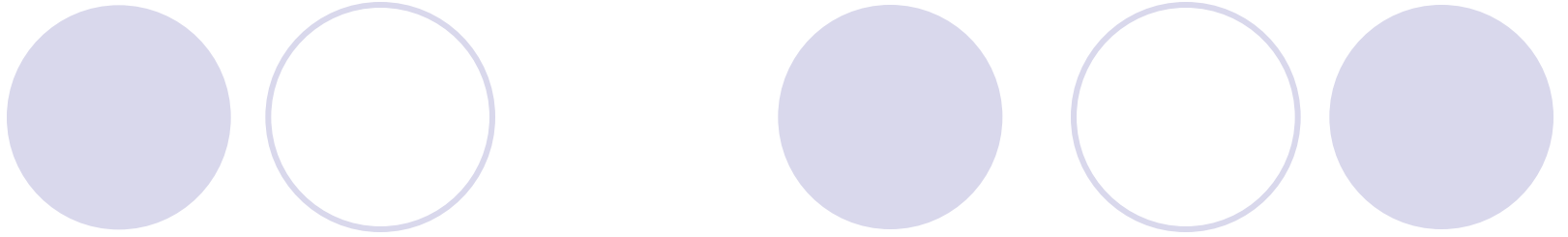
So let's be positive



Scientific Research unit
College of applied medical sciences
Majmaah University, KSA

Thank You

وحدة البحث العلمي



The following presentations are in the pipeline:

Who is going to TELL US ?

- Experimental Design
- How to write a grant application?
- How to write a research report?

Thank you for listening, active contribution and useful suggestions