WRITING A RESEARCH GRANT PROPOSAL

1. FORMULATING A RESEARCH QUESTION

1.1. Identify a broad area of interest through literature searches, discussions with colleagues, policy makers and the community, then ask yourself a series of questions:

− Is this idea stimulating and important enough to me so that I would want to spend considerable time thinking and reading?

− Does this idea have long-term potential to be expanded and contribute to my career?

− What is the focus of my department, institution, and profession, and how do their goals fit with my topic of interest?

− Does the idea reflect contemporary thinking in the field?

− Will the idea contribute by contesting contemporary thinking in the field?

− Do I know the field and its literature well?

− What are the important research questions in this field?

− What areas need further exploration?

− Could my study fill a gap or lead to greater understanding?

− Has a great deal of research already been conducted in this topic area?

− Has this or a similar study been done before? If so, is there room for improvement?

− Is the timing right for this question to be answered?

− Which funding agencies would be interested in funding this study?

− If you are proposing a service program, are the target community and policy makers interested in such a programme?

− Most importantly, will my study have a significant impact on the field?

1.2. Evaluate your resources by asking yourself these questions:

− What is my level of expertise, interest and comfort with this topic?

− Do I have the necessary skills or knowledge to carry out my idea?

− Do I have the time to complete the tasks that will be required?

–   Am I willing and able to commit the time to a project?

–   Do I have the resources needed to complete the project?

–   Are others available to serve as collaborators to complement my level of expertise?

1.3. Write an abstract or concept paper that reflects your current thinking. This will help you narrow your topic and force you to describe your idea systematically. This abstract can also be used to obtain feedback from colleagues and potential funding agencies.

1.4. Ddiscuss your ideas and establish whether the idea fits the priorities of the funding agency you are targeting.

1.5. Begin to reshape your ideas based on these conversations and a further review of the literature.

1.6. Finally, a good research question should be narrow enough to address specific issues but not so narrow that it can be addressed with a yes or no answer or the gathering of a few statistics.

2.   FORMULATING A HYPOTHESIS

➢ Hypotheses are more specific predictions about the nature and direction of the relationship between two or more variables. A well-thought-out and focused research question leads directly into hypotheses.

➢ Ideally, a hypotheses should:
  – Give insight into a research question.
  – Be testable and measurable by the proposed research methodology.
  – Spring logically from the experience of the researchers.

➢ Make sure that you:
  – Provide a rationale for your hypotheses explaining how they were derived and why they are strong?
  – Provide alternative possibilities for the hypotheses that could be tested and explain why you choose the ones you did over others?

3. AIMS AND OBJECTIVES

An aim is a broad statement of desired outcomes while objectives are the steps you are going to take to test your hypotheses or answer your research question.
Make sure that each hypothesis is matched with a specific objective. Your **objectives must be measurable, highly focused and feasible,** given the time and money you are requesting in the grant. Be realistic about what you can accomplish in the duration of the grant and within the budget requested

4. PROJECT TEAM

> **Researchers, especially new researchers, should not work alone.**

➢ The **goal of this section is to demonstrate the experience and competence** of the applicant or project team to perform the tasks of the proposed project. Use this section to show reviewers that, based on your past successes with similar research, the project team is capable of carrying out this work. If you have limited experience, **complement your experience by teaming-up with a collaborator** to enhance your expertise in certain areas.

➢ Ask yourself the following questions when deciding on a project team:
  - How willing am I to work with others to shape, develop, and implement this idea?
  - Am I willing to be flexible and see different sides of a question?
  - Am I willing to let go of or modify an important idea to fit the interests of others?

➢ **Roles in a traditional Research Project Structure**

Role	Examples of Responsibilities
Principal Investigator	Oversees entire project, especially its scientific integrity
Co-investigator	Contributes to a discrete area of expertise
Project co-ordinate/director	Day-to-day management of the study
Interviewers	Assessment of participants
Interventionist	Implements experimental protocol in intervention studies
Data coder/cleaner	Coding, data capture, checking for accuracy of data entry
Data base manager	Establishes and maintains data files
Statistician	Assists in determining statistical analysis

➤ **The principal investigator (PI) is the person responsible for directing the study or project, and is accountable to the funding Institute for proper conduct of the study.**

What makes a good PI? These are some general criteria:
- Recent publications in peer-reviewed journals related to the proposed research area
- Prior supervision of research team members
- Prior position as a key member of a research team
- Receipt of prior funding for grants/contracts in the proposed research area
- Preferably a doctoral degree but sometimes a Masters degree with proven research experience in the proposed area.

➤ **Collaborators are generally researchers in your field or a related discipline who can complement your skills and expertise.**

Here are some suggestions of ways in which to find possible collaborators:
- **Network yourself!** Start attending major conferences in your field.
- **Join professional organisations** in your field.
- **Contact other researchers** in your organisation, nationally or internationally.

When deciding on a collaborator it is advisable to choose people:
- who can **add to your expertise**, not copy it
- who are **not too busy** to help you when you need help
- who are willing to agree to disagree
- you get along with and will enjoy working with

➤ **Collaborators can also serve as mentors**

These are some of the benefits of having a mentor.
- Having access to experienced researchers, especially in your field.
- Receiving assistance with developing and exploring research ideas, hypotheses, etc.
- The sharing of personal and professional experiences while writing and submitting a research grant proposal.

- Receiving relevant and up-to-date information about new research methods.
- Establishing collaborative associations with peers.
- Constructive feedback on research proposals and throughout the research process.
- Assistance in the development of a long-term research and writing plan.

These are some ways in which collaborators can contribute through the mentoring of less experienced researchers.

- Sharing knowledge and experiences with others new to the field

- Serving as a role model; demonstrating leadership in research.
- Involving new researchers who share the same or similar interests to work on current projects in order for them to gain research experience.
- Strengthening research efforts in their field of interest.

➢ **Curriculum vitae of team members**

This should focus on the individual's experiences relevant to the work he/she will do on your project such as research skills and experiences, management/supervision experience, publications and/or paper presentations.

5. **SHORT DESCRIPTION OF THE PROJECT (ABSTRACT)**

This section should include information relating to:

- The purpose of the research
- The importance of the research
- The background and feasibility of your project
- A brief description of relevant information, the target population, hypotheses, and methodology
- A brief description of methodology and expected results
- A description of the contributions your research will make to the field of knowledge and health outcomes.

6.   BACKGROUND

➢   Make certain that your background discussion **remains focussed** on the issues your research will address. At the end of each topic, point out to the reader how your proposed findings will help resolve important issues in the field.

➢   The background section should contain:

－   Information about the **scope of the problem** i.e. why it is widespread, serious, or important.

－   A critical **review of the relevant literature**, including highlights of ongoing research and gaps in knowledge. As a general rule, citations older than 10 years should not be used unless they are absolutely necessary in making the case for the proposed study or, if they are seminal works that should not be omitted.

－   An explanation of why this study needs to be done, and why this research is relevant and necessary for the target population. The work must be placed in context. Use statistics and prevalence rates to emphasise the need. Spending some time to conduct a small pilot study before you submit your proposal will increase your chances of getting funded. If pilot data is unavailable, specifically mention data relating to similar projects that support any of the ideas or hypotheses of the proposed study.

－   A well-grounded theoretical basis for your study or project; remember that reviewers tend to look favourably upon projects that have strong theoretical underpinnings. You need to convince the reviewer that you are planning to test hypotheses, not simply collect data to confirm you favourite hypotheses, and that you are open-minded enough to reject your hypotheses if the experimental results do not support your hypothesis.

－   The long-term uses of this research, including the contributions to the existing pool of knowledge.

7.   METHODOLOGY

The goal of the research design and methods section is to:

‒ **Minimize the number of assumptions reviewers must make about your project.**

‒ **Show that you are using scientifically sound approaches.**

➢ Make sure that the study you describe corresponds with the specific objectives you listed earlier in the proposal.

➢ Make sure that the underlying science and methods behind your plan are sound, feasible and complete as possible.

➢ Give details of:
  ‒ The design of the study (e.g. descriptive, comparative, longitudinal, case-control, quasi-experimental, randomised) and explain why that design was chosen.
  ‒ Data collection procedures (how will the data be collected, who will collect the data, what procedures will be used?).
  ‒ The procedures for training of researchers or interviewers.
  ‒ Access to specialised facilities or equipment where applicable.
  ‒ Procedures for handling of participants and confidentiality issues.
  ‒ Procedures and approval for working with animals where applicable.
  ‒ Possible hazards to research personnel and study participants and procedures to prevent dangerous situations.

➢ Briefly discuss the limitations of the proposed study, and alternative methodologies for carrying out the proposed research plan if these limitations impact negatively on your ability to conduct the study as planned.

➢ Give a timeline for tasks to be completed during the project period. The timeline must accurately reflect what was planned for in the study and be consistent with the requested budget.

➢ **Statistical Considerations**

> **Researchers that do not have a sound working knowledge of statistics are advised to consult with a biostatistician to ensure that the procedures for sampling, data collection and data analysis are scientifically valid.**

Ensure that the following have been fully considered in your methodology section:

– What data will be collected and the frequency of data collection.

– The inclusion and non-inclusion criteria for subjects or participants.

– The source of recruitment of subjects or participants is clearly indicated.

– The nature of the control group, if any, indicating whether it will be simultaneously studied or whether it will be a historical reference group.

– The research instruments and data collection forms. If these have already been developed, include a copy of each instrument in an appendix. Include details of previous reliability and validity data for the instruments.

– The sample size. Indicate whether this is sufficient in the light of the expected difference and the variance within the control and test groups. What power does this sample size give you for addressing the objectives of the study? How long will it take to obtain this sample size?

– Data analysis and evaluation. The data collection should address all the objectives of the study and the statistical analysis should consider all the data collected. Indicate the statistical procedures and methods that you will use to analyse the data for each hypothesis you are testing and explain how will you deal with missing data. The methods to be used for statistical analysis must be appropriate and documented.

8. BUDGET

➢ Include all other sources of funding for the proposed study.

➢ Provide a justification for all categories of funds requested.

- ➢ Reviewers can recommend budget cuts when they think that expenses are overly high or unwarranted. The budget must accurately reflect the plan for data collection, data analysis, and data write-up.
- ➢ If you are just beginning as an independent investigator, do not ask for a very large grant. Demonstrate that you can complete a good small project for a relatively smaller amount of money and establish a good track record before applying for larger research grants.

9. OUTCOMES OF YOUR STUDY

- ➢ Consider the following questions:

  - – Why are you doing this research?
  - – What are the long-term implications? Who will benefit from these findings and who might be deprived or harmed as a result of the study?
  - – What will happen with the research findings?
  - – What is the ultimate application or use of the research?

10. INSTITUTIONAL APPROVAL

Ensure that your proposal has the necessary ethics and institutional approval before submitting to the funding agency. Incomplete proposals could be returned to you and will delay the review of your proposal.

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Finally

Do not submit an incomplete application

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