Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 7, Issue, 05, pp.16525-16529, May, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

HOW TO WRITE A RESEARCH PROPOSAL IN PUBLIC HEALTH

[1,*]Dr. Sriram Chandramohan and [2]Dr. Abdulwahab. A. Alkhamis

[1.2]Department of Public Health, College of Health Sciences, Saudi Electronic University, Kingdom of Saudi Arabia

ARTICLE INFO

Article History:
Received 25th February, 2015
Received in revised form
02nd March, 2015
Accepted 14th April, 2015
Published online 31st May, 2015

Key words:
Public Health Research,
Research Proposal,
Protocol, Study Questions,
Study Design,
Project Management,
Ethical Consideration

ABSTRACT

The development of new medical treatments and cures would not happen without health research and the active role of research volunteers. Behind every discovery of a new medicine and treatment are thousands of people who were involved in health research. Thanks to the advances in medical care and public health, we now live on average 10 years longer than in the 1960's and 20 years longer than in the 1930's. Without research, many diseases that can now be treated would cripple people or result in early death. New drugs, new ways to treat old and new illnesses, and new ways to prevent diseases in people at risk of developing them, can only result from health research. The research proposal is an important step in developing a research project. In the first instance it helps you to further define your research question and enables you to demonstrate how you intend to go about answering that question. Secondly, the research proposal is able to give an overview of the research project so that other people understand the scope of the research, the significance of the research. This Paper attempts to provide the researchers, the various steps involved in formulating a health research protocol.

Citation Dr. Sriram Chandramohan and Dr. Abdulwahab. A. Alkhamis, 2015. "How to write a research proposal in public health", *International Journal of Current Research*, 7, (5), 16525-16529.

INTRODUCTION

Research is the systematic collection, analysis and interpretation of data to answer a certain question or solve a problem. Health Research, likewise, is a research effort to address health related problems and come up with better solutions to mitigate the prevailing problem (Corlien *et al*., 1991). The students and the young researchers do not fullyunderstand what a research proposal means, nor do they understandits importance (Wong, 2015). A research proposal is a document that presents a plan to investigate a given problem to reviewers for evaluation. It can be a supervised project submitted to instructors as part of the educational degree (e.g., master's thesis or Ph.D. dissertation) or it can present a project proposed to a funding agency. Its purpose is to convince reviewers that you, the researcher, are capable of successfully conducting the proposed research project. Reviewers have more confidence that planned project will be successfully completed if the proposal is well written and organized, and if you demonstrate careful planning (Traenkel and Wallen, 2015). A good research proposal is the key to successful research. Any research-whether in the area of Public Health examining the impact of smoking and lung cancer, passive smoking, or industrial pollution of in the area of social change investigating the impact of new agricultural technology on a rural society--must begin with a clearly focused research proposal. In recent times there has been a proliferation of researches indicating an exponential growth of scientific activity, which has made the business of research competitive. A good research proposal has become a necessity not only for ensuring a high quality of research but also for the practical reason of landing a research grant. In addition, a good research proposal assists the investigators to minimize the time cycle of the research activities and subsequently, increases the efficiency of the research.

This article attempts to provide the researchers, the various steps involved in formulating a health research protocol. The first major section in a research proposal is the 'statement of the problem'. It should describe the problem that is to be investigated and the questions that will guide the research process. Note that proper justification of the importance of the research questions to be addressed requires some sense of the likely contribution to knowledge that the research will make and its place in current debate or technological advance. Often, this can be presented in the form of research hypotheses to be tested (Donald *et al*., 2001).

Corresponding author: Dr. Sriram Chandramohan,
Department of Public Health, College of Health Sciences, Saudi Electronic University, Kingdom of Saudi Arabia.

Elements of research protocol

While formulating a scientifically sound health research protocol, following elements/steps should be taken into consideration (Donald *et al*., 2001; Enarsan *et al*., 2004).

Elements of research protocol

While formulating a scientifically sound health research protocol, following elements/steps should be taken into consideration (Donald *et al*., 2001; Enarsan *et al*., 2004).

1. **Abstract**
2. **Introduction**
   - *Study questions*
   - *Rationalesinclude why it is important toinvestigate this topic*
   - *Previous knowledge on the subjectincluding which is missing in the current knowledge.*
3. **Objectives**
4. **Design and methods**
   - *Study design*
   - *Study population*
   - *Sample size and sampling*
   - *Study subject : selection, definitions*
   - *Study questionnaires, formats*
   - *Data collection methods*
   - *Data management and statistical analysis*
5. **Project Management**
   - *Action - plan*
6. **Ethical considerations**
7. **Expected outcomeand limitations of the study**
8. **Budget Preparation**
9. **References**
10. **Appendices**
    - *Study formats*
    - *Budget details*
    - *Curriculum – vitae of Chief Investigator and Co-investigator*

Abstract

Although the title page and abstract appear as the first section of a research proposal, they are the last to be written. The title page gives the essential information about the proposal. Immediately following the title page you should include an abstract. The abstract is a summary of the basic information contained in all the other sections of your proposal. Do not overload an abstract with unnecessary information. Keep it short (no longer than one or two pages), precise, and to the point. The abstract should tell the reader: (Epidemiology Basic Methods, 2000)

- The problem to be studied.
- The main objective of the study.
- The major expected implications of the study.
- Who will conduct the study
- When the study will be conducted.
- Where the study will be conducted.
- What methods will be used to conduct the study?
- What resources are required for the study?

Introduction

It puts the proposal in context. It should answer the question of why and what: why the research needs to be done and what will be its relevance. A brief description of the most relevant studies published on the subject should be provided to support the rationale for the study.

Ideally, a properly executed critical review of the literature lays a sound foundation for the study from which the rationale for the study, the statement of the problem, hypotheses or research questions, and the design of the research emerge or concretize. A 'long' but complete and thoughtful review will help you convey the message (Health research methodology, 1992). If the proposal for PhD thesis, it is expected to do thorough critical review and study the knowledge gap in the literature as well as to extensively highlight the important and benefits of investigating this topic (Estelle *et al*., 2010; Alkhamis, 2014).

Objectives

A research objective is a statement that clearly depicts the goal to be achieved by a research project. In other words, the objectives of a research project summarize what is to be achieved by the study. The objectives should be Specific, Measurable, Achievable, Relevant and Time based (SMART objectives) (Justus, 1997).

MATERIALS AND METHODS

The methodology of a research project is the core of the study. The following are important questions to consider when beginning preparing a research design for a research proposal. Taking into consideration the work already done on selection of a research problem, review of the literature, and identification of research objectives or hypotheses, questions should include (Justus, 1997):

Components of a research design that should be addressed in the methodology section of a research proposal

- Research methods or techniques
- Variables
- Sampling method
- Plan for data collection
- Plan for analysis of data and interpretation of the results

- What do I want to measure?
- How can I measure it?
- Where should I measure it?
- What will I do with the answers collected?
- How can I check whether my methods for measuring are correct before beginning a large study?
- What professional and non-professional staff do I need to carry out this study?
- What types of logistical support do I need?
- Are there any ethical problems related to the study?
- How can I avoid introducing biases into the study?
- What constraints may affect this study?

The type of study chosen depends on (http://www.uniadmisssion.com, 2000)

- The type of problem
- The knowledge already available about the problem, and
- The resources available for the study.

The study designs can be classified into following

- Cross-sectional study
- Cohort study
- Case-control study
- Experimental/Intervention study.

Study population

This section defines the group in which the study will be carried out and to whom will the results refer – Geography / age-group/ epidemiological group.

Variables

A variable is a characteristic of a person, object or phenomenon, which can take on different values. These may be in the form of numbers (e.g. age) or non-numerical characteristics (e.g. sex). A simple example of a variable in the form of numbers is 'a person's age'.

The variable 'age' can take on different values since a person can be 20 years old, 35 years old and so on. Other examples of variables are: weight (expressed in kilograms or in pounds); home - clinic distance (expressed in kilometers or in minutes walking distance); monthly income (expressed in Birr, or Dollars); and number of children (1, 2, etc.).Other variables such as hypertension expressed in mmHg, and temperature expressed in (Celcius or Fahrenheit).Because the values of all these variables are expressed in numbers, we call them Numerical Variables. Some variables may also be expressed in categories. For example, the variable sex has two districts categories, groups, male and female. Since these variables are expressed in categories, we call them Categorical Variables (Corlien *et al*., 1991; Justus, 1997).

Sampling and Sample Size

Sampling is the process involving the selection of a finite number of elements from a given population of interest, for purposes of inquiry.

A sample is a representative part of a population. In research it is not always possible to study an entire population. A decision is often made, therefore, to study only a small fraction of the population, or a "sample" of it, from which conclusions can be drawn about the whole population. A sample should possess certain characteristics. There are two basic/general types of sampling techniques: Probability (or random) and non probability sampling. The nature of your research studywill determine which type of sampling you should use. Large-scale descriptive studies almost always use probability-sampling techniques. Intervention studies sometimes use probability sampling but also frequently use non-probability sampling. Qualitative studies almost always use nonprobability samples (Brownlee, 2003). Many books contain formulae for estimating sample size because the size of the sample is one of the most important determinates of the accuracy of survey estimatesFormulae differ among sampling strategies (for example, those used in cluster sampling are different from those used in simple random sampling); and differ with population size; the type of variable being studied; experimental design, if any; and type of statistical comparison planned (http://web.idrc.ca/en/ev-57070-201-1-DO_TOPIC.Html, 2010).

Study subject: selection, definitions

This section should explain the following points

- How many subjects will be selected?
- Where and why?
- Define eligibility, inclusion and exclusion criteria
- Mechanism of selection (Explain the strategies for insuring there is no bias in the sample selection).
- Estimation of the number of potentially eligible subjects.
- Feasibility of selecting the required number of subjects and estimate the proportion that will agree to participate.

Study questionnaires and formats

Study questionnaires or data collection formats should be designed in such a manner that it will include all the required information in a systematic manner with a brief introduction on the study formats or questionnaires. All the study formats or questionnaires should be placed as annexure (Fisher *et al*., 2002).

Data collection methods:

A plan for data collection can be made in two steps

Listing the tasks that have to be carried out and who should be involved, making a rough estimate of the time needed for the different parts of the study, and identifying the most appropriate period in which to carry out the research.

Actually scheduling the different activities that have to be carried out each week in a work plan (http://web.idrc.ca/en/ev-57070-201-1-DO_TOPIC.html, 2010). Ideally, a pretest of the data collection and data analysis procedures should be made. The advantages of conducting a pretest before we finalize our proposal is that we can draft the work plan and budget based on realistic estimates, and revise the data collection tools before we submit the proposal for approval.

Three main stages can be distinguished in the data collection planning process:

Stage 1: Permission to proceed
Stage 2: Data collection
Stage 3: Data handling

Data management and statistical analysis (http://web.idrc.ca/en/ev- 57070-201-1-DO_TOPIC.html, 2010)

This section should describe the following:
a) Procedures for coding and entering data into computer files
b) Measures to ensure the completeness and accuracy of the information
c) Examples of how the results will be displayed and comparisons made d) Statistical tests to be carried out in order to test each of the stated hypotheses e) Appropriate references for the statistical tests and computer programme to be used.

Project Management

Gantt chart

A Gantt chart is an overview of tasks/proposed activities and a time frame for the same. You put weeks, days or months at one side, and the tasks at the other. You draw fat lines to indicate the period the task will be performed to give a timeline for your research study (John O'Del, 1998).

Ethical Considerations

In designing research, especially research that involves human subjects, it is important to consider the underlying ethical principles. Proposal for such research must be reviewed by the relevant Ethical Committee. To this end all ethical issues must be dealt with at inception. Such action takes care of possible conflicts between competing sets of values (Justus, 1997). In addition, it is critical to disclose if there is a conflict of interest of the investigators.

Expected Outcomes (Krathwohl, 1988)

This section restates the justification for the study in terms of the anticipated results. It will specify the following points

- The implications of the potential results.
- How the results of the study may be useful to the policy makers, community at large and for future research.

Study limitations (Donald *et al*., 2001)

It is important to include in this section the possible criticisms of your design and methods andprovide reasons why you think the limitationsimposed by your choices are not the serious ones.

Budget Preparation (John O'Del, 1998)

A detailed budget will help you to identify which resources are already locally available and which additional resources may be required. The process of budget preparation will encourage you to consider aspects of the work plan you have not thought about before and will serve as a useful reminder of activities planned, as your research gets underway. In addition, during the budget preparation, it is advisable to consider all the human, materials, technology, equipment, and logistical expenditure.

References (http://web.idrc.ca/en/ev-57070-201-1-DO_TOPIC.html, 2010)

The proposal should end with relevant references on the subject. For web based search include the date of access for the cited website, for example: add the sentence "accessed on March 7, 2015".

Appendices (Epidemiology Basic Methods, 2000)

- Biographical data on the principal investigator and Co investigators
- The study questionnaire if you have it.
- The consent form.
- A copy of the approval from the Institutional Review Board.
- A Budget Copy
- Any explanatory material (such as annual report) about your institution or the origination under whose name the study will be conducted.

- A list of references if you have cited literature in the proposal.

REFERENCES

Alkhamis, A. 2014. The Differences between M.S. and PhD, Aleqtusadidah, issue 7433.

Brownlee, A., Thomas, C.N., Yolande, M. How to Develop Proposals and Design Research to Solve Priority Health Problems. Health Service Research Course. WHO/AFRO-SHDS: WHO/Boston University Medical Center, 2003.

Corlien, M., Indra, P. and Brownlee, A. Designing and Conducting Health Systems Research Projects. Proposal Development and Fieldwork. Vol. I, 1991.

Donald, A.E., Susan, M.K., David, L.M. and PerBakke. 2001. Research methods for promotion of lung health – A guide to protocol development for low-income countries, IUATLD, 23-34.

Enarsan, D.A., Kennedy, S.M. and Miller, D.L. Getting started in research – the research protocol, *Int. J. Tuberc Lung Dis.*, 2004. 8,1036-1040.

Epidemiology Basic Methods: Center for Clinical Epidemiology and Biostatics, 2000. The University of Newcastle, New South Wales, 2308, Australia.

Estelle, M. Phillips and Derek. S. Pugh, 1 Oct. 2010. How to get a PhD: a handbook for students and their supervisors, Open University Press; 5 edition.

Fisher, A.A., Foreit, J.R. and Laing, J. *et al*. May 2002. Designing HIV/AIDS Intervention Studies. An Operational Research Handbook. Population Council.

Guidelines for Writing a Project Proposal. International Development Research Center (IDRC). (Available on line at: http://web.idrc.ca/en/ev- 57070-201-1-DO_TOPIC.html).

Health research methodology: A guide for training in research methods. WHO Regional publications. Western Pacific education in action. Series 5.WHO 1992.

John O'Del. Grants and Grant Proposal Writing 2nd Edition. Academy of Management Entrepreneurship Division International Committee, 1998 (Available online at: http://www.slu.edu/eweb/grants.htm).

Justus, I.M. Issues in Social Science Research. Social Science Research Methodology Series 9. Module 1, 1997. OSSREA.

Krathwohl, D.R. 1988. How to prepare a research proposal: Guidelines for funding and dissertations in the social and behavioral sciences. Syracuse, NY: Syracuse University Press.

Research proposal for Management Finance and Economics: Guideline on Writing a PhD Research Proposal, 2000. (Available on line at: http://www.uniadmisssion.com/ NEWSITE/unaid/realted_links/Phd%20Guide.htm).

Traenkel, J.R. and Wallen, N.E. How to design and evaluate research in education. On line learning center with power web. Available at www.highered.mcgrawhill. com/sites/0072981369/student_view0/chapter24/key_terms .html [Accessed March 7, 2015].

Wong, P. How to write research proposal. International network on Personal meaning. Available at www.meaning.ca/archives. [Accessed March 7, 2015].

****