Schulich MEDICINE & DENTISTRY

Western

Department of Epidemiology & Biostatistics

Principles & Guidelines for the Proposal Style MSc Thesis

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1. Introduction

Our MSc program recognizes the extensive time and money often necessary to undertake epidemiologic studies capable of yielding 'definitive' results. Unlike laboratory sciences in which a series of smaller thematic experiments can be undertaken sequentially, answering questions in epidemiology often requires a single project involving a large sample. The interval from conception of a project to its completion, particularly with prospective designs, can easily exceed time frames for the degree program itself.

Because an epidemiologist conducting a large study has only one chance to get the details right regarding fundamental issues of sampling and measurement, a sound and complete research proposal is seen as an invaluable scientific document in its own right. The scientific worth of a good proposal, when considered alongside the learning that occurs and the time needed to prepare such a document, together justify the product as one that is worthy of submission as a thesis in partial fulfillment of the requirements of a Masters of Science degree.

2. Principles

In view of the above, the program encourages students to consider a proposal thesis when it is suitable to the student and the topic. Suitability can be judged by applying the following principles and guidelines:

A. Scale and Scope:

The proposed project should not be too big to be conducted within the time frame and with the resources available to an MSc student. Students should not take a project that could be manageable and inflate its scope and boundaries as a means of avoiding a full data collection and analysis ('definitive') thesis.

B. Career-building:

A research proposal should be a desired outcome of the student's program. Proposals are most valuable when they lead to actual research projects. Thus, they should be written in the spirit of intended submission for funding and eventual execution of the project. The program encourages students to phrase a proposal as part of a larger program in research that will take them to their next career stage. For example, a proposal can be planned for possible execution as a PhD project or, for those entering junior positions in academic medicine, an early independent research project. For some students, for example those with no manuscripts on their CVs, the advisory committee might suggest that a peer-reviewed manuscript (or two) might serve the student better in the next career stage than a proposal.

C. Equivalency:

The proposal thesis should not be seen as a short-cut to the degree vis-à-vis MSc projects that produce 'definitive' statistical inferences. It should involve intellectual effort, library and field work substantially equal to MSc theses that have substantive as opposed to methodological objectives.

3. Guidelines for Authors and Advisors

A. Contents:

The proposal thesis, as a research protocol, should be complete with respect to:

- background knowledge, rationale, and demonstration of the need to answer a particular question;
- clear statement of research objectives of the proposed projects;
- detailed specification of sampling and/or randomization procedures, or administrative data source;
- detailed specification of measurement procedures including identification of variables, a schedule of data collection, a complete questionnaire or other data collection instrument(s), psychometric information on the measures to be used;
- description of analysis, clearly linked and relevant to the objectives with sample size justification;
- a time-line for the major stages of the proposed project.

B. Length:

To encourage skills in efficient technical writing, the body of the protocol containing central details, and supporting appendices, should fit within the space limitations specified by actual granting agencies. It is also desirable to include an introductory chapter (a longer critical literature review than is typical of submitted protocols), and an extended discussion of the way the knowledge sought will complement the existing body of knowledge.

C. Data:

The thesis must involve the collection, analysis and appropriate interpretation of data. The detailed requirements depend on the student's existing skill set and on the proposed topic and source of data. These are best determined by the advisory committee, but will include a 'pilot study'. Thorough pilot work is especially important when students have no prior experience with actual data collection, management or analysis.

D. Pilot Studies:

While there are different types of pilot studies, common features include the following:

- Pilot studies collect preliminary data. The objectives are methodological in nature, not substantive as in the actual proposed study. Examples of methodological objectives are: (i) to collect preliminary data to permit sample size calculations; to permit sample size calculations; (ii) to demonstrate feasibility of proposed sampling techniques (e.g. response rates; re-contact rates; participation rates); (iii) to demonstrate availability of a sufficient number of eligible consenting patients (e.g. after application of inclusion and exclusion criteria and explanation of the proposed study).
- Pilot studies often contain an element of 'dress rehearsal' particularly for projects involving complex or untried data collection procedures. The idea is that, if errors or omissions are to occur in a research project, the time to identify them is before the study is in the field. For example, if a project will require family physicians to identify eligible subjects, who will then be visited by home care nurses for collection of blood samples, which will then be sent to a laboratory for analysis, which will then e-mail the results to the study coordinator, this entire complex set of procedures should actually be tested on a small number of potentially eligible subjects.
- Pilot studies often contain a psychometric/clinometric component, particularly if the measures are original or have not been used with the proposed population. If applicable, issues of validity and reliability should be addressed using appropriate methods and sample sizes. Extensive pre-testing is an appropriate part of a pilot study when scale development is involved.

E. Ethics:

Projects involving original data collection must receive the approval of the Research Ethics Board of the University before any data collection is undertaken.

F. Letter of Support:

Actual letters of support from those whose assistance would be essential for a project to succeed (e.g. family physicians, Board of Education, clinic directors) are not required as part of a proposal. However, the author should identify as part of the proposal those whose cooperation is essential to the study, specify the nature of the assistance that would be required from each, and (because investigators often write suggested letters of support which collaborators put on their letterhead and sign), include a sample letter of collaboration/support.

4. Guidelines for Examiners

A. Acceptability:

Examiners will focus on the following issues in determining acceptability of a proposal style thesis:

- whether a project *should* be done, in terms of the need for the knowledge that might result;
- whether it *could* be done as proposed, or following minor modifications;
- whether the student could take responsibility for the actual execution of the study.

The likelihood that a project as proposed would receive funding is not relevant except insofar as funding success is reduced by technical deficiencies in the proposal.

B. Oral Examination:

Examiners should feel free to ask questions on background skills and resources needed to undertake the project as stated. These can include experience collecting, storing and analyzing data; training and supervising interviewers; general study administration. Students' experience need not be extensive and may consist of only the pilot study.

C. Determining Unacceptability Before the Thesis Examination:

Criteria whereby proposal style theses may be judged unacceptable before the examination include:

- if a 'fatal flaw' related to its execution is identified;
- if it is manifestly incomplete as a statement of proposed research;
- if there are major issues related to its feasibility (e.g. absent or grossly inadequate pilot study data).

D. Revision and Re-examination:

The protection afforded the student under the SGPS guidelines apply to this style of thesis as well.