Guidelines for preparing the Final Research Report

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Acknowledgement

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Table of contents

GUIDELINES ON PREPARING THE FINAL RESEARCH REPORT

STRUCTURE

The research report is made up of three sections: front matter, body, and end material.

Front Matter

- Title page
- Acknowledgements
- Abstract
- Table of contents
- List of tables
- List of figures & illustrations
- List of annexes & appendices
- List of abbreviations & symbols

Body

- Introduction
- Literature review
- Methods
- Results
- Discussion (including limitations)
- Conclusions and recommendations

End Material

- List of references
- Annexes / Appendices

GENERAL INFORMATION

The final research report should be written in the past tense, in a readable manner with no grammatical errors or spelling mistakes.

The formatting should be consistent throughout the report.

Care should be taken not to avoid repetition.

Copying from other sources or any other form of plagiarism is not acceptable.

Plagiarism refers to taking other people's ideas and words and presenting them as your own. Examples include:

- Using someone else's ideas or words without appropriate acknowledgement (including ChatGPT and other generative AI tools).
- Submitting your own work in more than one course.
- Making up sources or facts.
- Obtaining unauthorized assistance for any assignment.

All of the above are unacceptable acts of academic dishonesty and will not be tolerated.

Plagiarism can be avoided by:

- Using quotation marks to indicate exactly what someone else wrote and referencing the original source.
- Paraphrasing, which means formulating a passage from source material in your own words by changing the wording, sentence structure, and the order of ideas with a reference to the original source.
- Summarizing in your own words the ideas written by someone else and referencing the original source.

Sentences should be short and written in simple English.

Always begin sentences with a word. If a sentence begins with a numerical value, it should be written as a word and not as a numeral (e.g., "Ten percent of the population had diabetes" and not "10% of the population had diabetes"). All numbers below 10 (1-9) should be written as words.

All acronyms should be written in full with the acronym included within parentheses when it appears for the first time (e.g., "The World Health Organization (WHO)"). All acronyms/abbreviations need to be included as a list in the front of the report along with the list of tables and figures.

TITLE

The title should be clear and concise. It should reflect the essence of the study and make the general objective clear and specify what study population has been studied.

The title should not end with a full stop.

It should not contain acronyms/abbreviations.

It is advisable not to include phrases like "A study of."

ABSTRACT

The abstract should be structured under the following headings:

- Introduction
- Objectives (only the general objective)
- Methods (a concise summary of study design, study population, sample size, sampling technique, study instruments and statistical analysis)
- Results (relevant to the specific objectives in concise form)
- Conclusions and Recommendations.

The abstract should not exceed 350 words.

A list of three to five keywords need to be placed at the end of the abstract. They could be derived from the title or any significant results.

INTRODUCTION

This section consists of three main components: background, justification and objectives.

i. Background:

Define the research problem (central concept of the study or the dependent variable). For example, if the study is on "universal health coverage" define what is meant by it.

Describe the problem (what is it?) and its size and severity (magnitude) and distribution (who is affected, where, and what are the consequences).

Analyze the major factors that are known to contribute to the problem and possible unknown factors in the research setting and discuss why certain factors need more investigation if the problem is to be fully understood.

Briefly describe the socio-economic and cultural characteristics of the population, provide an overview of health status/healthcare system in the country/district, as relevant. Include statistics, if available, to help describe the context in which the problem occurs.

Include in-text citations where needed.

ii. Justification:

This section should highlight the need for the study based on the gaps identified and potential benefits of the findings. Highlight how the knowledge generated is useful and generally applicable to solve the research problem identified.

Include in-text citations where needed.

iii. Objectives

All objectives should be clearly phrased in **operational terms** using **action verbs** and indicating what is done, where (study area/setting) and on whom (study population).

The **general objective** is a broader statement incorporating the specific objectives.

Specific objectives break down the general objective into smaller, logically connected parts that systematically address various aspects of the problem. They should cover all aspects of the study and be listed in a logically sequenced manner.

LITERATURE REVIEW

The literature review describes previous research done on the topic.It should begin by describing the search strategies, including data bases searched, and the search terms.

The literature review should be organized in an orderly manner according to the specific objectives as far as feasible. It could also be organized based on chronological order (according to time period). It may be further subdivided as global, regional and local studies as per relevance. Select the most appropriate structure for your study.

Each article referred to should be described giving adequate information for the reader to form their opinion about the findings and conclusions. The following areas should be covered in relation to each article: study aim, methods (study design, study population, computed sample size, sampling technique, study instruments, their validity, quality of data or properties of study tools and statistical analysis), relevant results (e.g., prevalence, incidence, odds ratios with confidence intervals, p values) and conclusions. This core information is required for the reader to determine the validity of data presented and conclusions arrived by the authors of the article. If this information is not included in the article, highlight these deficits in your review.

End with a summary of the findings reported in different studies, addressing consistencies and inconsistencies, while drawing attention to the research gap identified as relevant to your research problem.

Include in-text citations where needed.

Plagiarism in any form will not be tolerated. Avoid cutting and pasting abstracts in the literature review.

METHODS

This section describes in detail how to present the methodology employed in the research. While the use of mixed methods designs is encouraged, please note that this guideline focuses on quantitative methods because they are a required component of the undergraduate research project. Not all the elements listed are relevant to qualitative research. Students should seek guidance from their supervisors on the reporting of qualitative methodologies/methods.

The chapter should consist of the following:

i. **Study design –** state the study design.

ii. **Study setting –** details of the setting and the specific location at which the study was conducted. Provide additional details of the study setting that are relevant to the research problem.

iii. **Study period –** the time period during which the study was conducted, including the data collection period.

iv. **Study population**

It is important to define the study population clearly.

Descriptive studies usually have one study population; analytical studies have a minimum of two study populations (study and control groups).

State the "Inclusion" and "Exclusion" criteria or both or none, as per relevance, to select the sample from the study population/s. These need to be stated separately for study and control groups in analytical studies.

v. **Sample size calculation**

Appropriate formula based on the study design should be described including the terms, variables and parameters of the formula (e.g., in the formula to determine prevalence, the estimate of prevalence referred from a previous article should be described giving the name of the variable, the setting, and the reference to the article).

Describe step by step how the final sample size was computed (by substitution of the formula with relevant values).

If a statistical package was used for sample size calculation, indicate its name and the inputs required to compute the sample size using the package.

Incorporate the non- response rate as well.

Descriptive studies:

- The variable selected to compute the sample size with relevant proportion(s) (the SD if the variable selected is numerical) should be specified.
- The required precision and the confidence level should be stated.

Analytical studies:

- Proportions relevant to the two groups
- Power
- Ratio of study: control

If cluster sampling is used, the design effect, number of clusters and number of study units/cluster (cluster size) should be specified.

vi. Sampling technique

State the technique used. Describe the sampling frame, application of inclusion/exclusion criteria, the final sampling frame and its size, source of random numbers, as relevant.

In analytical studies, describe the sampling technique used for the study/control groups separately (the sampling technique need not be the same for the two groups)

vii. Study instruments

All instruments including translations should be annexed.

The type of questionnaire and its main components should be described.

For example,

- Section 1 - Personal data
- Section 2 - Socio-demographic characteristics
- Section 3 - Knowledge, Attitudes and Practices

Source of questions, whether borrowed from similar questionnaires or designed by the researcher or a combination of both should be stated, along with the relevant citations and permissions.

If responses were assessed using a scale describe how scores were assigned and on what basis.

The language the scale was originally designed in and the method adopted to translate it to the language in which it was administered, as applicable, should be described.

Describe how the questionnaire was validated and by whom. Include methods adopted to ensure/assess validity (at least face and content validity).

If the tool used is a validated one (e.g., GHQ30) a brief description regarding validation with the reference should be provided. **If it has not been validated, discuss this under limitations in the discussion chapter.**

For laboratory methods or clinical examination, describe the protocols followed with citations. For measurements using equipment, include calibration details and the degree of accuracy specified for the measurement (e.g., measurement of weight: to the nearest 0.01 kg). Some details may be annexed if lengthy.

viii. Study variables

Operationalization refers to the process of turning research concepts into measurable variables.

Describe how the variables specific to the study were operationalized. It is not necessary to describe operationalization of common socio-demographic variables, unless the latter are of primary interest to the study. For example, if socio economic status is assessed using a composite score, the details of this need to be included.

ix. Pilot study/Pre testing

Pre-testing refers to testing the study instrument before data collection. A pilot study is a small scale version of the entire study conducted from start to finish.

The pre-testing of all survey instruments must be described.

The following aspects need to be described in relation to pre-testing/ pilot testing: participants, sample size, study setting, and relevant administrative procedures.

x. Data collection

Describe where data were collected and under what conditions.

Describe data collecting procedures, the profile of data collectors, the type of training given to them, how the participated were identified, how the consent was obtained from participants, and how privacy was maintained, if applicable.

xi. Data analysis

Descriptive and inferential statistics appropriate to the data should be applied.

Descriptive statistics

Quantitative data: if normally distributed, as mean (SD) with range; if skewed, median (IQR) with range.

Qualitative data: expressed as a percentage with respective 95% confidence intervals.

Variables which are assessed using a scoring system (e.g., knowledge) need to be described with additional information, including the minimum and maximum overall scores, weighting if applicable, and the basis for cutoff levels selected to classify the sample in to sub groups, if applicable.

Inferential statistics

Quantitative data: t-tests (paired and/or independent sample t-tests) and Z- test based on the sample size. One-way ANOVA if more than two groups are present. Pearson's correlation for the relationship between two quantitative variables.

Qualitative data: chi square test or Fisher's exact test depending on the sample size.

All statistical associations should be described with the respective *p* (simple *p*) value.

Report the exact *p* value (e.g., *p* = .001 and not as *p*< .01). Probability (*p)* values of .000 in the output should be reported as *p*<.001 (not *p* = .000).

Strength of association may be tested and reported as odds ratio or prevalence ratio with the respective 95% confidence intervals and *p* value.

Statistical software that was used for statistical analysis should be mentioned.

xii. Administrative requirements

Describe from whom permission was obtained and through whom.

xiii. Ethical issues

Describe ethical issues specific to the study and the measures taken to overcome them and general ethical aspects such as informed consent, voluntary participation, privacy and confidentiality, assessment of risks and benefits, fate of data, dissemination of findings, etc.

Theinstitution from which ethical clearance was obtained to be included.

RESULTS

Commence the chapter by including a general statement about the total sample size and the response rate. It should be followed by description of the sample in terms of key socio demographic characteristics relevant to the research problem.

The rest of the chapter should be organized as far as feasible according to the sequence of the specific objectives.

Please pay attention to the following:

i. Text

All variables should be described in the text. Despite the use of tables/figures, the salient points relevant to the variable must be written in the text. The reader should be able to obtain an idea about the essential features of the variable of interest, just by referring to the narrative text (and not the table) .

ii. Common to tables and figures

Not all data need not be presented in tables/figures.

Tables help to present data in a concise and effective manner. Figures/charts should be used sparingly (i.e., to demonstrate trends and relationship between variables).

Do not use tables and figures to present the same results.

Tables and figures should be numbered separately according to the order in which they appear in the text. Reference should be made to the tables/figures in the text, and such reference should preferably precede the relevant table/ figure.

When presenting results, confine to just one decimal point, unless having two or more has some relevance for interpretation.

Percentages described in the text should be supported by the relevant frequencies in parenthesis and vice versa.

Statistical analysis to be presented in tables/figures, with interpretation in the text.

iii. Specific to tables

Tables should be self-explanatory (the reader should be able to read and understand the information provided in the tables without referring to the text).

Tables should be numbered according to the order in which they appear in the text, using Arabic numerals.

Table titles should be simple and concise with a clear description of the key elements shown in the table such as study groups, classifications, variables etc.

Title has to be placed above the table and space left between the title and the table.

Captions (legends/titles) of columns/rows should be clearly labeled with units.

The font size may be reduced if required, but maintain consistency throughout with regard to the font size of the text in the tables.

The results reported may be center or right aligned. Right aligning numbers are easier to read. Maintain consistency.

If totals do not add up to the original value (due to missing data) indicate the frequency of missing data.

Column-wise totals and percentages are considered better than row-wise totals and percentages. When reporting chi square results, row percentages should be reported.

Place the tables as close as possible to the relevant text.

Preferred orientation for tables is **portrait**. However, landscape may be used in unavoidable circumstances (when there are too many columns).

Confine tables to one page as far as feasible. The table can be extended to two or more pages ensuring that the table title in the extended pages is indicated as 'Table no. x continued' (no need to repeat the title), and all captions (titles) of column heads are included in the extensions on each new page.

Abbreviations may be included anywhere in the table (body, columns and row heads) and denoted using symbols, but the full description of it should be included as a footnote indicated by the same symbol [e.g., asterisk (*), alphabetical letters (in lower case), according to your preference].

All vertical lines in the tables should be removed, but horizontal lines may be left when necessary to separate major sections of the table.

If the data are not original, their source should be given in a footnote.

Reference to the statistical test used should be included in the table, along with other relevant features of the test needed to interpret the data (e.g., chi square test: degrees of freedom, chi square value and the *p* value).

iv. Specific to figures and charts

The figure/chart **titles** to be placed below the figure.

v. Units

SI units should be used except for blood pressure measurements (mmHg). The unit symbols are not altered in the plural (milligrams are "mg" and not "mgs") and not followed by a period unless at the end of a sentence (centimeter is "cm" and the full stop (cm.) is used only if it appears at the end of a sentence).

DISCUSSION

It is customary to start the discussion with a brief account of the main results in relation to the objectives of the study, containing only minimal statistical data.

The rest of the discussion should cover all the aspects mentioned below as per relevance and should be organized according to the flow of the information. Like the results, it could be structured according to the study objectives.

The main purpose of the discussion is to explain the results and address the question "so what'' by making reference to the relevant results to support the discussion. Do not repeat chunks of results.

Reference to tables depicting the relevant results being discussed is recommended in order to make it examiner/reader friendly.

Provide scientifically plausible explanations to the positive findings of the study.

Explanation/discussion of negative findings in terms of sampling, measurements, procedural issues, etc., is as important.

Describe bias in terms of selection, information and confounding, and measures taken to minimize bias.

Include explanation, interpretation and implications of findings; discuss their relevance to public health/clinical medicine.

Compare and contrast the findings to other studies (local and global): in terms of consistency/inconsistency of findings.

Limitations to be discussed in terms of bias, quality of data and other factors. Refer to data quality and validity and the generalizability of data.

Sum up at the end; be brief and specific.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions should be the answers to the specific objectives written in summary form with minimal statistical information.

Recommendations should arise from the results/conclusions. They should be practical and clearly stated in terms of implementation as described below:

- Remedial action to solve the research problem
- Further research to fill in gaps.

REFERENCING

Harvard APA style should be used.

ANNEXES

Should be numbered using Roman numerals according to the order in which they appear in the text and referred to in the text in the appropriate place.

FORMATTING

The research report should be word processed on both sides of the page on A4 size paper using font style **Times New Roman font size of 12**. Line spacing should be 1.5. A margin of not less than 40 mm should be left on the left hand side to facilitate binding and margins of not less than 20 mm should be left on the top, right hand side and at the bottom.

Section headings should be capitalized and centered and the subdivision headings should be placed at the left hand margin in lower case bold type lettering.

Page numbering:

Front Matter: In Roman numerals (using lower case) starting from the Title Page (a, ii,iii, iv…….). The number (i) is not inserted on the Title Page.

Body and end material: Arabic numerals (1, 2, 3, 4…….)