

Master Thesis Guidelines

Professorship of Public Health and Prevention
TUM School of Medicine and Health
Department Health and Sport Sciences

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The guidelines described in this document (chapter 1, 2 and 3) apply to students of the Master in Health Science. Please note that for students of other faculties or institutions other regulations may apply. Please check these in advance and discuss them with your supervisor.

1. Introduction & requirements

The master thesis represents part of the final examination in a master program, together with the final oral defense. During the project, the student should identify, answer and discuss one research question and should present the thesis using scientific methods and current transparency and reporting standards.

Depending on the envisioned topic area for the master thesis, we also recommend master students who are interested in writing a thesis with us to successfully participate in one or more of the following modules:

- Public Health and Socio-Economic Aspects in NCD Prevention
- Evaluation Methods in Public Health and Health Care
- Economic Evaluation of Health Care Programs.

2. The process

Application

Students who wish to start their master's thesis in the summer/winter semester must officially apply by email (info.php@mh.tum.de) no later than the end of January/June. After the respective deadline, we will contact you within one month after reviewing the applications to let you know whether we can offer you supervision or not.

Please send the following application documents to info.php@mh.tum.de:

- Curriculum vitae
- Current transcript of grades
- A letter of motivation of maximum one page (including which topics and methods interest you the most)
- If you already have a concrete topic idea, please also attach a short summary (max. 1 page) with literature sources. The summary should follow this structure:
 - 1) What is your research question?
 - 2) Why is this question relevant from a Public Health perspective?
 - 3) Which steps/contents should the thesis cover, in order to answer such research question?
- Your preliminary time and work plan

We hope to be able to offer supervision to all interested students, but cannot guarantee this due to capacity constraints. We will contact you within 14 days of receiving your application.

Topic identification

In your letter of motivation, you should specify which subject area you are interested in and which methods you would like to use in your thesis (systematic literature review, empirical analysis, etc.). After acceptance, we will discuss potential topics within your interest area and we will assign you a supervisor. Thereafter, the chosen topic should be developed by the candidate in close communication with the assigned supervisor.

Before officially registering your thesis, you should write an exposé (~2 pages) of the planned work. The exposé should include the background, objectives, research questions, hypotheses, planned methods/data, envisaged analyses and bibliography as well as a schedule with a timeline of execution of the work.

Registration

After agreeing on the exposé, the registration form will be signed by the supervisor (for the Master in Health Science, the document can be found [here](#)).

In order to register, please follow the faculty guidelines (can be found [here](#) and [here](#)). According to the official guidelines, for the registration you should send the original registration form to Ms. Hufnagel, accompanied by an email to abschlussarbeiten@sg.tum.de¹. Please include your supervisor in Cc. The email should include:

- Thesis title in German and English
- Name, degree program, matriculation number
- Signed registration form

The starting date will coincide with the date you send the email to Ms. Hufnagel. Please inform us about acceptance of your registration by the examination board by sending us the form signed by Ms. Hufnagel.

Please note that these regulations might be subject to change. The candidate is responsible for the correct registration procedure.

Additionally, at the Professorship of Public Health and Prevention, we ask all students to sign a transparency and authorship agreement (downloadable from our website) to clarify important aspects and mutual responsibilities during the supervision process. The agreement should be signed by both the supervisor and the student upon registration (a digital signature of both parties is sufficient).

Processing time and supervision process

For students of the Master in Health Science, the thesis is usually written in the fourth semester and the processing time is 6 months after registration. For students of other faculties or institutions other regulations may apply.

At the Professorship of Public Health and Prevention, the supervision process of master theses is structured in two parts:

- Month 1-3: intense supervision via regular meetings with the supervising team. This stage usually includes developing, writing and discussing a study protocol or analysis plan. This document ensures agreement on central methodological aspects of the work, enhances transparency and reproducibility and ensures that the student has

¹ Please note that due to the Covid-19 pandemic this regulation might vary. Sending the original application might no longer be necessary, since the process will take place fully digitally. Please consult your supervisor.

understood all relevant stages of the project before execution. The protocol will be uploaded online to our OSF page (<https://osf.io/4cv7b/>) before the analysis or the article search starts, in order to increase transparency and compliance with good practices of open science, and may be made publicly available. The first 3 months of the thesis period also include close collaboration and feedback to the students in the first stages of executing the research project (data preparation and first analyses, article search and screening, etc)

- Midterm interim presentation: usually halfway through the processing time or when the first results are available, we ask students to carry out a presentation of their research project to the whole PHP team in an informal meeting. The meeting is scheduled for 45 minutes and other master students that are currently writing their thesis with us are also invited to join. For the meeting the student is supposed to prepare a presentation of about 20 minutes that summarizes the rationale, methods and the preliminary results of the thesis. The final 20-25 minutes will then be discussion in the group. We suggest students to use at least 3-5 minutes of their time to outline for the group what their remaining questions are; these could be about how to wrap things up, whether certain ways of presenting the data are clear, how to summarize any tricky results, how to interpret particularly difficult issues, etc. The idea of the interim presentation is that students receive feedback and ideas for their thesis from the whole PHP group. The more students can take advantage of the experience of the group the better.
- Months 4-6: after the midterm presentation we encourage students to work as independently as possible towards completion of their project / analysis and writing of their thesis. Meetings with the supervisor are still possible upon request from the student.

At the time of thesis registration, a detailed timeline will be discussed and agreed upon with your supervisor. The supervisor and the regular meetings are supposed to support the student in following the predefined schedule. However, please be aware that ultimately, time management is the responsibility of students during the Master Thesis. To this aim, we also recommend students to keep in mind a “soft deadline” for the completion of the thesis at the end, i.e. targeting a completion of the thesis at least four or five days in advance of the official deadline. This should help students to manage unforeseen events and to produce a final version of the thesis which includes all necessary content, layout and formal requirements described in this document.

3. Submission & oral defense

Submission

We recommend students to read and carefully apply the regulations and requirements described in the present guidelines. **Before submission, students should plan two or three weeks to go through the described requirements to make sure that all necessary content, layout and formal requirements are satisfied (especially regarding the main text structure and content and supplementary material required).** To help students make sure that their work complies with our guidelines, we recommend candidates to carefully read and work through the submission checklist provided.

For students of the Master in Health Science, the thesis should be submitted to both the examination board secretary (Ms. Hufnagel) and the chair. Please submit a digital version of the thesis (PDF format), including all necessary files and documents either embedded in the main file or as additional files, via the LRZ Sync & Share Cloud to both Ms. Hufnagel (abschlussarbeiten@sq.tum.de) and your supervisor. According to § 18(9) APSO, submission in paper form is no longer required.

Oral defense

After submission of the thesis, the supervisor will grade it. Thereafter, an oral defense of the thesis will take place at the Professorship of Public Health and Prevention (either online or in presence). Please contact your supervisor to fix an appointment.

You should prepare a 15 minutes power point presentation, where you give a brief overview of the background, research question, methods, most important results, discussion and conclusions of your work. Please try to focus on the most important aspects, usually 8-10 slides are enough. This will be followed by 15 minutes of questions and discussion regarding both the presentation and the thesis. Here we usually focus on methodological clarifications, interpretation and critical appraisal of your study, but please be aware that potentially all aspects of your work will be object of scrutiny and questions from our side. We expect students to answer our questions in a clear and concise way, for example showing which thoughts and considerations they had behind important methodological decisions and results interpretations. Please be aware that the presentation will not be graded separately from the main thesis. According to the TUM exam regulations the presentation should not contribute to the final grade.

Feedback meeting

We usually offer students the possibility of an informal feedback meeting shortly (~10 days) after the oral defense. Students are free to choose whether they want to schedule this meeting or not.

4. Format & Layout

Please use the template provided by the Professorship of Public Health and Prevention. The final thesis should respect the following guidelines.

Language

Master theses should be written in English.

Layout

Paper format	A4
Page numbering	bottom of page (footer); the title page should not be numbered; the rest should be numbered consecutively.
Main font	Arial, Times New Roman, or similar
Font size	11, justifies alignment
Line spacing	1.5/double spaced
Borders	2.5 cm left and right

Length

The length of the thesis should be individually discussed with the supervisor. Master theses usually consist of 6.000-7.000 words and maximum 5-6 tables or figures in the main text (excluding references and appendices). Tables and Figures should be embedded in the main text where they are first mentioned.

References

All references (direct or indirect) to previously published contents should be appropriately cited in the thesis using a standard citation method (e.g. APA, Harvard, Vancouver, etc). This method should be applied consistently in both the citations throughout text/appendix and to the reference list. All cited sources in text should appear in the reference list and vice-versa.

The references should include primary sources, current scientific literature or textbooks. Other sources (such as web pages, non-scientific articles, etc.) should be cited only when no scientific resource is available. Great care should be taken in citing them sparingly and correctly.

You are strongly recommended to use a literature management program and to manage citations and bibliography automatically via the same program. Your supervisor will advise you on this.

Please note that failure to acknowledge the work of others is considered as plagiarism and is a serious offense, which might result in candidates failing the master thesis module.

Structure

Please use the provided template. The following structure applies:

Title page

Table of contents

Index of tables, figures, list of abbreviations used in the thesis

Main text body (more information below)

Appendix or Supplementary Material (more information below)

Specification of individual contribution (more information below)

Declaration of authorship (more information below)

For the title page please refer to the provided template.

The main text body should be structured like a research paper, including:

Abstract

1. Introduction (~10-25%)
2. Methods (~25-30%)
3. Results (~25-30%)
4. Discussion (~25-30%)

References

Numbers in brackets give a *rough indication* about how much of the total number of words is usually dedicated to each section. Please discuss this with your supervisor.

The **abstract** is a concise and short summary of the background, research question, methods, results and conclusion of your study. It should be no longer than 250/300 words. On the same page, a word count of the main text (excluding tables and final references) should be included.

In the **introduction** the general context and the problem investigated in the study should be presented, sustained by compelling references, also showing the public health relevance of the investigated topic. Usually, the introduction to a scientific paper follows this structure:

- (1) compelling problem statement and public health relevance,
- (2) available evidence on the topic and literature gaps,
- (3) motivation for the study, research question, (hypotheses) and mechanisms,
- [(4) explanation of the structure of your paper].

You can access more tips and information on how to write the introduction to a scientific paper [here](#).

The content of the **methods** section strongly depends on the type of study which is carried out. All data and tests, which are explained in the methods section, should be presented in the results section and vice versa. In a systematic review/scoping review the search strategy should be clearly described, alongside eligibility criteria for studies and a description of the screening and data extraction process as well as intended approaches taken to quality appraisal and results presentation. In a quantitative study, the data, the study population and the selection criteria should be clearly stated, together with a description of relevant variables and analytic methods employed. The protocol / analysis plan should be mentioned and referenced here. Parts of it can be used for the final methods section, also clearly stating if, how and why the final analysis differed from the original plans.

The **results** section should be clearly structured, with compelling and informative tables and graphs, and presented in a neutral fashion, i.e. without any interpretative additions. The contents also depend on the type of study. In a systematic review/scoping review, a flowchart of the retrieved studies should be presented and the main findings should be clearly described. In a quantitative analysis, the results description should cover descriptive and analytic results, help the reader understand the content of the tables (e.g. by providing a written explanation of coefficients and other tests) and not be redundant. All tests and models whose results are presented in this section, should clearly correspond to what was explained in the methods section. Further sensitivity and stratified analyses should be also presented in the results. Tables should include a title (above) and a caption (below), while figures should include both a title and a caption below. Tables and figures should be self-explanatory. Each figure and table should be mentioned in the text and appear close to the first mention.

The **discussion** section should summarize your findings in the context of the research hypothesis and should offer an interpretation for them, also in light of comparable evidence. This part of the study should also include a thorough discussion of the strengths and limitations of the research (including generalizability of the results) and offer some implications for further

research and policy practice. The conclusions should be clearly based on the results of the study. You can find [here](#) more tips and information on how to write a discussion/conclusion section of a scientific paper.

The main body should be compliant with the respective reporting guidelines of the EQUATOR Network (<https://www.equator-network.org/reporting-guidelines/>). Compliance with these guidelines should be explicitly stated in the appendix by including and compiling the available checklists.

The **appendix** or **supplementary material** should include all further important documents and information necessary to understand the study and to transparently disclose as much information as possible regarding the data/material and research methods employed. These materials are an essential part of the work, so students should take great care in ensuring that all relevant material is uploaded and presented together with the thesis. All appended additional material should be appropriately cross-referenced in the text.

For evidence synthesis works (e.g. systematic / scoping / umbrella / integrative reviews) we expect students to upload following documents:

- The appropriate checklist with the respective paragraph number
- A detailed account of the search strategy used
- The final full-text screening table
- The final results extraction table
- The filled out quality appraisal checklist for each study (if applicable)
- Additional tables / figures

For empirical analysis studies, we expect students to upload the following documents:

- The appropriate checklist with the respective paragraph number
- Questionnaires used (with appropriate translation)
- A data dictionary / codebook
- Full analysis syntax as R-markdown
- Additional tables / figures

Specification of individual contribution and declaration of authorship

The candidate should state his/her individual contribution to the thesis and acknowledge the role of others who may have contributed to the work. To this purpose, the candidate should indicate which percentage of the work he/she has completed within each of the following areas: identification of the research question, field work (e.g. data collection, studies retrieval, etc.),

data analysis and manuscript writing. Additionally, in each phase the role of other colleagues/supervisors should be acknowledged by indicating who participated and to what extent. Please refer to the provided template.

Finally, the thesis should be accompanied by a declaration of authorship, where the candidate declares that he/she conducted the work independently and in compliance with good scientific practice (including correct citation of sources). Also here, please refer to the provided template.

5. Last but not least: our philosophy

The master thesis represents usually the last large project before achieving the master qualification. The project aims at producing a final thesis: as such this is different than any other projects carried out during the previous studies. In this project, students have the possibility to apply what they have learnt during their studies and deepen their knowledge on a very specialized topic of their choice.

However, students should also be aware that the skillset needed to successfully complete such a master thesis or a research paper differs from the skillset usually needed to successfully complete exams, essays or projects during a master program. For example, knowledge and time management skills regarding planning, execution and management of a long project (6 months) are needed, together with the specific knowledge on data analysis for empirical papers (e.g. mastering R, understanding the statistical methods, data management etc) or the different and highly standardized stages of evidence synthesis methods (e.g. search strategy definition, search strategy execution and screening). Therefore, the skills required to successfully conduct a master thesis may therefore require students to develop skills beyond those acquired during their studies.

We are aware of this. Therefore, our goal is to accompany students during this project, providing and transmitting the expert knowledge needed to set up and carry out all project steps according to the methods and standards currently used in public health research. We view the thesis, especially the first part of the supervision process, as an opportunity for students to learn the new skillset needed, including methodological but also time and project management skills, rather than a final endeavor, where they have to prove and measure their abilities, which might result in a stressful experience.

Throughout the supervision process, we encourage open communication between supervisors and students, to align expectations and create a safe working environment. For this reason, we also encourage students who experience significant reductions of their processing time due

to personal, family-related or (physical/mental) health reasons, to make use of their permission to apply for an extension of the working time, if needed (more information [here](#)).

Last but not least, depending on the content and quality of the final work, we will be happy to actively encourage and support candidates after completing the evaluation process in bringing their results to publication and / or in presenting them at an (inter-)national symposium.