

# Writing Thesis for Speciality Courses in Medicine

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*This is how you should do it, you sit down at the keyboard and you put one word after another until it's done. It's that easy and that hard.—Neil Gaiman*



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## Key Points

- The thesis is defined as the final outcome of systematic research on a topic, which is presented as a requirement for acquisition of an academic degree.
- Thesis work helps in assessing the scientific aptitude of the candidates rather than their clinical ability.
- Careful planning and execution of the work includes various steps and a systematic approach to these can help in successful completion.
- Thesis work should be presented in a way that captures the reader's imagination and not as an assortment of facts.
- The conventional structure of a thesis comprise title page, certificates, table of contents, acknowledgment, introduction, aims and objectives, review of literature, methods, results, discussion, conclusion, summary and appendices.
- The student should be aware of the various "Don'ts of thesis writing" to avoid last minute hassles and rejection/revision.
- MD/MS thesis is carried out under the affiliation of a university, whereas DNB is affiliated to the National Board of Examinations.

"Thesis" is defined as the final outcome of systematic research and experimentation on a topic, which is presented as a requirement for acquisition of an academic degree [1]. The mandatory requirement for completion of the thesis as a part of the curriculum has been well debated over years and has now become the part and parcel of speciality courses in medicine. The words thesis and dissertation have often been used interchangeably [2]. Though both aims at training the student in the basic research methodology, the academic degrees obtained varies between regions. In Europe, "thesis" refers to a focused piece of work to obtain a doctoral degree whereas "dissertation" is a smaller research on a broader topic for a attaining a masters or postgraduate degree. However, in the US, it's vice versa, i.e., "thesis" for master's degree and "dissertation" for doctoral degree respectively. Although terminology varies, the intended purpose remains the same. Thesis work helps in assessing the scientific aptitude of the candidates rather than their clinical ability. It helps in training the student in the basic research methodology and hence kindles the interest in the candidate. It can contribute to the existing medical knowledge in a great way. The basic requirement for a successful thesis is the enthusiasm for taking up a topic and studying in its depth.

For a postgraduate student, successful completion of their thesis is a matter of pride and satisfaction, as it involves an in-depth study of the topic and years of hard work. Writing thesis is the most daunting task a postgraduate student faces, especially with time constraints due to clinical patient care and other academic activities. Thesis work and writing is, many a times, like a 100 m race for the amateur researcher, the course being quite quick with hardly any time for thinking as required. However, with proper guidance and planning, it can be a 400 m race which is neither too quick nor too long.

## Planning a Thesis/Dissertation

The postgraduate students are often overwhelmed right from the beginning of their course with constant worry regarding their thesis/dissertation. Peer pressure and short-cut advises seems tempting and often leads into detrimental situations later on. Careful planning and execution of the work can help tide over the “nightmare” easily as, in thesis work and writing, “well prepared is half done”.

The various steps in pre-planning a thesis involve the following:

- Choosing a topic
- Choosing a guide/mentor
- Verifying the guidelines
- Preparing a protocol and approval of the study
- Gathering information
- Well planned execution
- Writing thesis work

## How to Choose a Unique Thesis Topic?

This is the most important part of thesis writing. Getting it right will ensure the candidate enjoying the work and will set the pace for the work. A visit to the library and glancing through the theses accepted in the previous years can help in formulating a brain-map for undertaking the daunting task. A thorough discussion with the guide about areas appealing to you can also be productive.

An ideal thesis should be original work and should not be a disjointed work related to previously done vague topics. It should offer scope for creativity and choice for the student. Even though the initial idea is promulgated by the guide, an enthusiastic student should be able to take control in determining its directions. The topic should be able to bring out a few fresh perspectives and should be relevant to the workplace. It is important not to be overambitious while choosing a topic. It should be feasible to be completed over the set time period and should have adequate resources available. These are important criteria to be ensured before setting on the journey. The topic should be appealing both for the student as well as the guide so as not to lose interest half-way through. It is advisable to take up a topic that is gaining popularity over time. Though it sounds obvious, the fresh postgraduates may be unaware and may get excited with topics that were controversial few years back and hence adept guidance plays a role. It is advisable to choose a topic that is central and well connected to the areas the candidate would like to explore in future. This will provide with an opportunity to branch out interests in the course of their career. However, this is not mandatory as it's the basic learning of the process that sets the pace for future research and writing.

## Choosing a Guide/Mentor

The adept and professional guidance is the keystone for successful completion of a thesis. A good guide would sculpt out a researcher in his/her resemblance. Right from choosing a topic to helping with troubleshooting during the research work to writing and publishing, the role of the guide is inexplicable. The students are allotted guides based on their course speciality and are often not provided with an opportunity to choose amongst the available faculty. Hence, it's important to establish a good rapport with your guide so as to ensure smooth progress of your work. If, unfortunately, there is a lack of adept guidance, the students can always tactfully approach faculty they prefer for suggestions and advice.

## Verifying the University Guidelines

This step is vital before going ahead with the thesis proposal and the work per se as it helps in keeping up with the deadlines for the various steps as well as helps in formulating an outline of the process. The administrative guidelines are usually available on the websites of the university/institute or can be obtained by writing to the registrar. A research monitoring committee is formulated in the university/institute to assess and approve proposals for thesis, to assess the need for funding for the work and for monitoring and supervising so as to enable timely submission of the postgraduate thesis [3].

The students are often required to provide a detailed protocol of the study to the research monitoring committee for assessment within the stipulated time period, which is roughly 3–4 months from the beginning of the course. Few institutes require the students to physically present their protocol for approval. This helps in assessing the feasibility and adequacy of the projects, as well as help in modifying the protocol based on the inputs from the assessors. The protocols approved by the research committee will then have to be submitted to the ethics committee of the institute/university for approval, only after which the study can be commenced. The process of getting approvals and actual commencement of the work may take upto 6 months from the onset of the course. This process may however be more tedious and time-demanding in institutes/colleges which function under a combined university and hence keeping on time with the deadlines becomes all the more important.

It is advisable to understand the guidelines of thesis submission also right from the protocol stage of the study [1, 3]. Most of the universities usually require 3–5 bound copies apart from the soft copy of the thesis. The theses will then be sent to 3–6 assessors by the dean of the institute/university for decision regarding acceptance. The thesis may be accepted, rejected or revisions may be advised which has to be submitted within a stipulated time period. The valuation usually does not include an oral assessment of the candidate as in case of doctoral degrees [4]. For MD/MS thesis, public defense of the thesis is never carried out. However, some universities carry out an assessment of the candidate's depth of knowledge on the topic and involvement in the work as a part of the viva-voce examination. For speciality MD/MS courses, successful submission of the thesis work and its acceptance is mandatory to enable the student to appear in the final examinations.

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## Preparing a Protocol and Approval of the Study

The forerunner of thesis writing is the preparation of a protocol. A good grasp on the topic planned and a clear understanding of the goals of the study are essential for writing an effective protocol. A good and effective protocol will help in guiding through the conduct of research work. Well defined goals and objectives and a clear methodology are quintessential for an ideal protocol. The protocol should also define the statistics to be used in the study, the study design and rescue methods in case of unfortunate events.

The proposal has to be presented before the research monitoring and ethics committees to assess its appropriateness and approval for the conduct of the same [3]. However, it's important to keep an open mind and to make changes/modifications to the protocol if found necessary during the course of the study. The administrative guidelines of the respective institutes often provide details of such changes which require the approval of the committee prior to the modification.

## Execution of Thesis Work and Writing

This is the crux of the thesis/dissertation work where the postgraduate student sets out to find the answers to the questions raised in the topic. This requires a well-planned execution to avoid last minute hassles and falling behind time. Before setting out, it's important to assess the availability of the resources and plan a timetable. The students' zeal and vigor to devote adequate time in a divided fashion is important to ensure the adequate data and information to be collected in time.

As the study progresses, it's advisable to read and learn about the topics in-depth as this can help in making timely and useful modifications to the project. It is wise to start writing the thesis work simultaneously as the study progresses, especially the review of literature. The benefits of such an approach are manifold. Firstly, scientific writing is not based on talent, but on practice. Hence sooner the better so that there is ample time to make revisions and will provide time for improving the quality of writing. Secondly, writing as the thesis work is being carried out is an easy and efficient way of structuring the thesis as it takes much less time when things are afresh in the mind. The progress in writing will provide a psychological boost as well for carrying out the work. More importantly, gathering information to write the review will help develop new ideas to improvise/modify the thesis before it's too late for the same.

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## Structure of a Thesis

There is no single format for thesis writing and the general guidelines vary between universities [5]. Hence, verifying the guidelines for details such as layout, font type and size, word limits etc. is important. However, the conventional structure of a thesis is as follows:

- Title page
  - This should include the title of the dissertation/thesis, name of the student and the degree which is being applied, the time period of the work and date of submission.
- Certificate
  - These should be prepared in the format described in the thesis guidelines of university/institute. The conventional format certifies that the student carried out the work during the set time period for acquisition of the degree. Often, there is a declaration by the guide stating the originality and the conduct of work under his/her guidance.
  - Table of contents
- Acknowledgements
- Introduction
  - This should include a background and the rationale for conducting the study. It should emphasize on the contribution that the study can add to the medical knowledge and how it addresses any pre-existing lacunae.
- Review of literature
  - This section should discuss in detail the evidence available in the literature about the topic being studied. It should also summarize the findings of the relevant studies in the literature.
- Methods
  - This section should give in detail the methodology adopted during the study including all specific details such as name of instruments, drug used etc. The rule of thumb to be followed is that the methodology should be explicit and should be reproducible by another researcher who wants to carry out the study.
- Results, Tables and Figures
  - This is the most important part of the study as it describes the findings of the study. The conventional method is to describe the result in text as well as in form of tables and graphs. However, a concise writing like the results section of journal articles without repetition of data can also be adopted.
- Discussion
  - This section describes the bigger picture by comparing the results of the study with the available literature. There should be active critiquing of one's own study with an open mind. The students should be able to analyze their own study in depth and draw a conclusion.
- Conclusion
  - This section should provide an answer to the research question that was raised and should be drawn based on the results of the study.
- Summary/abstract
  - This section provides a brief overview of the study and should be written after completion of the entire work. This section may be added either at the beginning of the thesis or at the end based on the pre-set guidelines.
- References
  - A list of references should be provided at the end for a wider reading. It is advisable to follow a consistent pattern of writing references such as

Vancouver style or Harvard style. It is important to understand that the strength of the study is not gauged by the number of references and hence should avoid unnecessary citations.

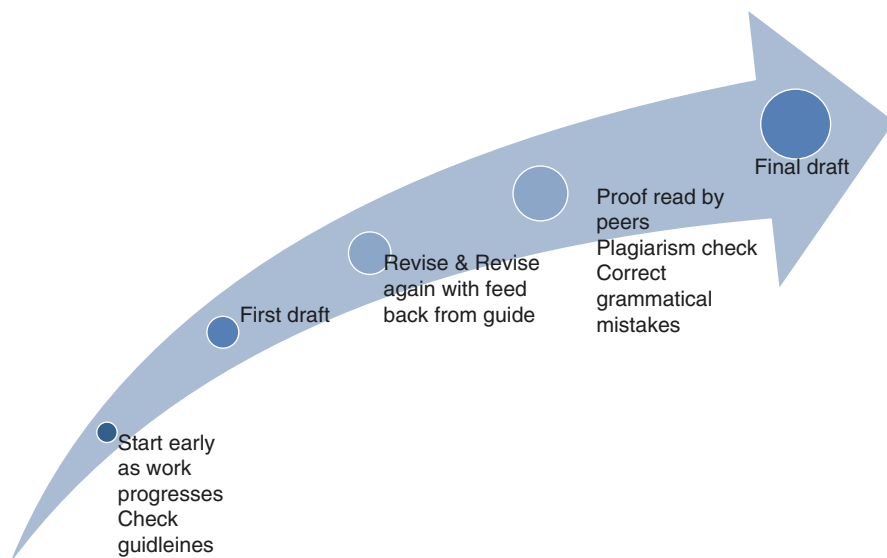
- Appendices
  - This section should include other information to be presented such as the master chart, data collection proforma, consent forms used etc.

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## How to Write Thesis Effectively?

Writing and presentation of the thesis work is the key skill to ensure the success of any project. As once told by a psychology professor at Oklahoma University, scientific writing can be compared to advertising [6]. An advertising agent tries to sell his product whereas the researcher tries to sell his results/findings. It should not, however, be misunderstood as good advertising can sell faulty products, but to persuade the public to buy a high-quality product it should be presented in a convincing manner. Similarly, thesis work should be presented in a way that captures the reader's imagination and not as an assortment of facts.

As mentioned earlier in the chapter, it is always a wise plan to start early alongside as the study progresses. It's better to start with sections of the thesis, which the author is confident of first rather than following a chronological order. This will sharpen and improve the writing skill and hence enable to tackle the difficult portions with ease. The first draft should be prepared as early as possible as it's highly unlikely to be perfect. Hence, prepare the first draft and submit to your guide for revision and feedback. Multiple attempts at working and re-working on the draft will be needed to sharpen the thesis and to improve the writing skills. Referring previous theses also will help by giving an idea on the structure, style and the pattern. Attention should be paid to managing references as they are read. Using software such as Zotero, Endnote etc. to create a database of the bibliography will be helpful while writing a structured thesis [7]. Though the task of learning to use these is cumbersome to start with, at the end of the dissertation/thesis it will prove useful. Avoiding plagiarism is another important part of effective writing. It is important that students understand what accounts for plagiarism and methods to avoid it. Plagiarism, though accidental, might even cost the degree. For non-native speakers for English, many universities offer courses or support for academic writing which may be beneficial. Many theses writing tools are now available online such as Boom Essay, Mendeley, Sparrho etc. which can help in easing the overwhelming task of writing the thesis [8]. Sharing the writing with peers for feedback is also an effective method for modifying the writing. This is more important as with time, it becomes difficult to maintain a critical distance from your work and hence typos and inconsistencies in arguments can be easily picked up by others. The various steps in writing a thesis effectively are shown in Fig. 1.



**Fig. 1** Steps in writing thesis effectively

### Don'ts of Thesis Writing

- *Avoid grammatical errors, as they are a sign of carelessness*
- *Don't try to sound too technical, the goal of writing should be clarity*
- *The paragraphs should not be written as disjoint entities.*
- *Writing can be stylish, but care should be taken not to lose the ideas in between the pomposity and verbosity*
- *The thesis-writing task should not be at the cost of time for relaxation as this instills a sense of exhaustion and will hamper progress and can adversely affect the quality of writing.*

### Pattern and Schedule of Thesis Writing for the Speciality Courses for the Diplomate of National Board of Examinations (DNB)

The Ministry of Health of Government of India established The National Board of Examinations (NBE) an autonomous body in 1975 at New Delhi so that the post-graduate medical education in India could be standardized. The degree awarded by the board is called as Diplomate of National Board (DNB) [9].

The selection of candidates under this programme is through the Centralized Entrance Test (CET) conducted at the national level twice a year. Graduate in medicine (MBBS-Bachelor of Medicine and Bachelor of Surgery) candidates are eligible to write the DNB-CET entrance examination for an entry into a DNB course which



is for a period of 3 years. If a candidate has a Diploma in a speciality, then the person is eligible to write an entrance for the postdiploma CET for an entry into a DNB course which is for a period of 2 years.

Once selected, the candidates start the course at their respective centres carrying out the DNB speciality courses in India. As a mandatory requirement to be awarded the DNB degree, the candidate has to carry out the thesis and complete it in the stipulated time frame which is varying according to the course of 2 and 3 years.

On starting the course candidates have to select the thesis topic and have to prepare the Thesis Protocol as per the guidelines set by The National Board of Examinations. Workshops are arranged by the NBE to sensitize the candidates in protocol and thesis writing at periodic intervals across the country. The format suggested for protocol includes synopsis, background and introduction, review of literature and lacunae, research question and aims and objectives, material and methods, references, data collection forms and clearance certificates from the Institute Scientific and Ethics Committee. Once the protocol is ready it has to be sent to the NBE for approval by the experts appointed by the NBE. Many a times the protocols are sent back to the candidates for revision by the NBE and the necessary changes have to be made and resent. The quality of the protocol can be improved if its critically reviewed by the guide or co-guide as the candidates are new to the field of research.

Following the approval from the NBE the thesis work on the research is started by the candidate under the guidance of the guide/co-guide. An interim analysis is conducted so as to get an idea of the work done so far and to suggest or correct lacunae's if any.

Once the work is completed, candidates have to send their completed thesis to the NBE board for approval, 6 months before their theory exams. The theory examinations by the NBE are usually carried out in the month of June and December. Submission of the thesis is mandatory to become eligible for theory exams, however, as opposed to the University guidelines for speciality examination for MD/MS courses, approval is not needed to appear for the examinations. Theses are sent by the NBE to subject experts at the national level for evaluation and approval, and once approved its conveyed to the candidates. In case the experts find some lacunae in the study its sent back for necessary corrections and has to be sent again for evaluation.

Approved thesis and successfully passing the theory and clinical exams is necessary for the award of the degree by the NBE. The candidate receives the degree at the central convocation of the NBE held at national level for the award of all the degrees.

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## **Causes for Revision/Rejection**

A thesis is not commonly rejected because of lack of originality, but it often requires revision/rejection when the ideas are disjointed and is poorly presented [10]. Errors such

as spelling or grammatical errors, complicated data and statistics without adequate explanations, incorrect references etc. reveal the carelessness of the student. In such situations, the assessor tends to suspect such callousness might have occurred in the conduct of the work and in the data presented. Hence, it's important to avoid these pitfalls. The importance of the writing skill can be well understood by placing oneself in the shoes of the assessor. Reading a long thesis is by itself taxing, however, reading a long and poorly written one can become painful. Hence, a well-presented thesis might get accepted even if the quality of work is of moderately acceptable nature.

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## Conclusion

Thesis work and writing hence is one of the most daunting yet rewarding tasks that a postgraduate student undertakes. Studying in-depth about a topic and producing a hard-bound copy of one's own findings and arguments can instill a sense of achievement that can kick-start a research career. The key to dispelling the myths about writing the thesis is thus by careful planning and execution, and constant practice to improve the writing skills.

## Case Scenarios

1. An ideal thesis topic should all of the following EXCEPT
  - (a) It should be original work and should not be a disjointed work related to previously done vague topics.
  - (b) The area of research should be able to bring out a new perspective and should be overall relevant and to the place of work of the candidate.
  - (c) It should be feasible to be completed within the time period of the thesis and should have adequate local resources and funds available to carry out the study.
  - (d) The topic which were controversial few years back also can be chosen as thesis is to familiarize with research methodology.
2. You are required to submit a thesis for obtaining your degree. Arrange the steps in the order in which you will approach:
  - (a) Collect literature on the topic
  - (b) Choose your guide and decide on the topic
  - (c) Write the manuscript
  - (d) Submit protocol for evaluation by the research committee.
  - (e) Start your thesis work/experiment
  - (f) Check university guidelines and prepare protocol.

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