Response to Reviewers

We thank the reviewers for the constructive feedback of our manuscript "Medical theses as part of the training in basic medical and dental education: Experiences from Finland". We have revised the article in accordance with the reviewers' comments.

Specifically:

Reviewer 1

Major Compulsory Revisions

1. We have revised the methods and included a description of how we reviewed the technical quality of the theses and defined the categories for this variable. We have also replaced the term "layout" with "technical quality".

2. We have added the following sentences: "The theses were categorized as using statistical methods if descriptive statistics (distributions, means, medians, standard deviations, etc.) or the results of formal tests of statistical significance were reported. The presence or absence of special advanced statistical procedures and techniques was reviewed in each thesis. The same classification was used as in the study by Miettunen et al. [11]. Multivariate methods and survival time analyses, for example, were considered to be special methods. To evaluate the quality of the statistical reporting information was obtained on whether the data analysis procedures were completely described in the methods section. The description of
methods was considered adequate if it satisfactorily explained what approaches and methods had been used to answer the main question posed in the research and why these had been chosen. Reliability of the evaluation of this information in medical research articles has been shown to be good [12].” We have not tried to find statistical errors in the papers, but instead we evaluated how often tables, figures, descriptive statistics, statistical significance testing and new statistical modeling techniques were used. We also investigated what is the information that students give on statistical data analysis procedures. We now use "Extensive description of the statistical methods" instead of "proper description of statistical methods" in the results section. We hope this helps to clarify the meaning of this variable.

3. We agree with the referee and we have replaced "theoretical" with "biomedical" and "clinical-theoretical" with "diagnostics or pharmacology". In our classification the diagnostic departments include following: Clinical Chemistry, Medical Microbiology, Forensic Medicine, Pathology and Diagnostic Radiology.

4. We have included the number of studies with experimental animals (n=6). We have also replaced "merely" with "extensive".

5. We have now added the percentage frequencies of different shortcomings.

6. We have re-written the text in the methods section in order to specify the definition of this variable. We now use "Extensive description of the statistical methods" instead of "proper description of statistical methods". We have also moved this sentence to the end of the paragraph.

7. We have removed this figure and incorporated the distribution of publication by theses type in table 1.

8. We agree and we have revised the conclusions section. We have also added new text to address the educational and training interventions.

9. We have reformulated this term "traditional format of reporting statistical analysis" as follows: "A high proportion of the theses (69.5%) were essentially statistical in character". We have also replaced "remained small" with "was low".

Minor Essential Revisions:

1. We have now used the term "protocol for data collection".

2. We have corrected the typo.
Discretionary Revisions

1. Thank you for drawing our attention to this article. In the discussion section, we have cited two papers (Salmi et al 2001, Frkovic et al 2003) to compare the publication practices.

2. The language of the text has now been reviewed by an expert.

Reviewer 2

Major Compulsory Revisions

1. We agree that this study is clearly of importance in our local setting within Finland. We think that the findings could be generalized beyond the immediate context. As reviewer 1 notes, these settings include medical and dental schools which require preparation of a mandatory thesis for MD and DMD degree, especially in Europe. We have now changed the title of our manuscript to "Medical theses as part of the training in basic medical and dental education: Experiences from Finland". We hope this will emphasize that the study was performed in a local setting. We have also revised the second paragraph in the introduction and added following in the discussion: "One limitation of this study should be noted. It was performed in a local setting in one medical faculty in Finland, and each educational setting is unique. Nevertheless, in spite of the limited scope, our findings might be helpful when considering possible educational and training interventions in medical and dental schools which require the writing of a mandatory thesis, especially in Europe."

2. We agree that our main research question was not to evaluate the pros and cons of a mandatory thesis. We have now revised the introduction and discussion sections to clarify the objective of our study.

3. Our aim was not to evaluate the appropriateness of statistical methods. We evaluated the frequency and diversity of use of statistical techniques. We also investigated the information that students give on statistical data analysis procedures in the methods section of their theses. Four assessors (PN, KS, MR and LR) reviewed the reports. Each thesis was read by one assessor. Where interpretation of the paper was ambiguous, the paper was appraised by the other authors and conclusions reconciled in a group discussion. We have now included more details of our variables and reliability of the evaluation in the methods section.

4. We have included the following comment in the discussion: "In 2001-2003,
when these theses projects were carried out, the regulations regarding theses for the MD and DMD degree at the University of Oulu were somewhat cursory. They simply stated that the preparation of the thesis should include participation in data collection, preliminary observations and their processing in a research project and writing of a report on the research project. They also included requirements for the extent of the thesis and general instructions for writing it. No instructions were available supervisors. This insufficiency of instructions for students and supervisors could partly explain some of the weaknesses in the theses".

5. The diploma theses written by medical and dental students in Finland are not available on the Internet. We think that universities should make the full text of the reviewed diploma thesis visible, accessible and useable by any potential user with access to the Internet. We note now in the manuscript that "The diploma theses written by medical and dental students in Finland are not currently available on the Internet. In order to maximize the visibility and usage of student’s work, medical and dental schools should make their reviewed diploma theses accessible to any potential users on the Internet. The full digital text of all theses can be deposited in the university's self-archive."

6. We have included eight new references which are relevant to our study. We think this markedly improves the readers’ ability to follow the points we make.

Minor Essential Revisions:

1. We have consulted a language expert. We have replaced "theoretical" with "biomedical" and "clinical-theoretical" with "diagnostics or pharmacology".

2. We have replaced "characters" with "characteristics". The citation counts are affected by the follow-up time i.e. how many years the articles have had time to receive citations. To eliminate the effect of publishing year (in comparisons) we have used the following variable: average number of citations received per year = number of citations / follow-up years. This variable can have also non-integer values. The distribution of the average number of citations received is skewed to the right, so median is an appropriate statistics to summarize the citations. The statistic on page 7 is the median value.

Formatting changes

No ethical approval was requested as the primary focus of this study was to evaluate written material and no experimental research on humans or animals was carried out.
We have included the following text in the Acknowledgements section: "The authors gratefully acknowledge the contributions of Hanna Pesonen, Chief Academic Officer at the Medical Faculty, University of Oulu, who provided support throughout the evaluation process. This study has been supported by a grant from the Teaching Development Unit, University of Oulu, Finland."