

STATEMENT

By Assoc. Prof. MARIYA PETKOVA TOKMAKOVA, M.D., PHD

First Department of Internal diseases, section of Cardiology

Medical University - Plovdiv

Of the doctoral thesis for the awarding of the educational
and scientific degree “Doctor of Philosophy”

In accordance with order № P-1185/19.07.2021

Field of higher education: 7. Healthcare and sport

Professional field: 7.1 Medicine

Scientific field and Doctoral Program: Cardiology

Author: Dolina Gencheva Gencheva, M.D.

Form of PhD: independent preparation

Department: First Department of Internal diseases, Medical University - Plovdiv

Topic: „ASSESSMENT OF CHANGES IN CARDIAC STRUCTURE AND FUNCTION IN PREGNANT WOMEN WITH PREECLAMPSIA AND GESTATIONAL HYPERTENSION”

Scientific advisors:

Prof. Fedya Nikolov, M.D., PhD

Prof. Ekaterina Uchikova, M.D., PhD

Scientific consultant:

Assoc. Prof. Krasimira Hristova, M.D., PhD

1. General presentation of the procedure and the PhD candidate

The presented set of materials and documents by Dr. Dolina Gencheva on paper and in electronic form is in accordance with the requirements of the Law for academic staff development in the Republic of Bulgaria and the Regulations for its application, as well as with the Regulations of Medical University - Plovdiv for the Procedure for acquisition of the educational and scientific degree “Doctor of Philosophy”.

The following statement is based on the presented doctoral thesis and its author’s summary, which are well structured and meet all the criteria. The dissertation is written on 197 standard pages, divided into 11 chapters as follows: Introduction; Literature review; Aim and objectives; Materials and Methods of examination; Results; Discussion; Conclusions; Contributions, Supplements, Publications and participations in scientific forums and projects related to the dissertation work; Bibliography. The individual sections are well balanced. The dissertation contains 24 figures and 66 tables which are informative and illustrate the results of the work. The author’s summary contains 60

pages and presents the main data of the doctoral thesis. The overall reading of the materials presented by the PhD candidate reveals a completed and competently written dissertation.

The aim of the study is specific, well-structured and corresponds to the problem under consideration. There are 4 main objectives, which are well structured and focused on the set aim.

2. Relevance of the topic and appropriateness of the set aim and objectives

The theme of the developed thesis is well chosen, as is the scientific team from the First Department of Internal diseases and the Department of Obstetrics and Gynecology at Medical University - Plovdiv, who took part in the study. The tests and methodologies included in the development of the work are highly specialized, approved by the international guidelines and performed utilizing modern equipment.

3. Knowledge of the problem

The literature review is properly structured, up-to-date, analytical and contains sufficient information material. It exhaustively covers the current knowledge on the topic. The PhD student demonstrates competence on the issues related to the topic and the necessity for the development of the doctoral thesis. The unresolved problems are analyzed and identified, the purpose and tasks of the dissertation thesis are convincingly motivated. In the process of developing her dissertation, the PhD student has investigated the researched problem in depth. The conclusion reached at the end of the literature review provides a summary of the problem and directs towards the unsolved issues on the subject. This enables the PhD candidate to formulate the aim of her study precisely and clearly.

4. Methodology of the study

A total of 123 pregnant women were selected on the base of accurately formulated inclusion and exclusion criteria, and were divided into three groups for the purpose of the study – women with gestational hypertension, women with preeclampsia and a control group. The materials and methods are described informatively and in detail. The selected echocardiographic methods for assessing left-sided and right-sided structural parameters, left ventricular and right ventricular systolic and diastolic function allow the fulfillment of the purpose – to clarify changes in cardiac structure and function in pregnant women with preeclampsia and gestational hypertension. The current recommendations for echocardiographic studies, endorsed by EACVI and ASE were followed. Routine laboratory markers and the levels of specific biomarkers such as Galectin-3, high-sensitivity C-reactive protein, natriuretic peptides, interleukin-6 and placental growth factor were studied. The statistical methods used are precise and allow an appropriate illustration of the results and the main conclusions of the scientific study. The results are presented on 74 pages, well-illustrated. The discussion provides a logical and in-depth analysis of the results, which highlights Dr. Gencheva's professional and competent approach to the developed problem. The conclusions are 8 in number. They

meet the set objectives at the beginning of the thesis and are in line with the intended aim of the study.

5. Characteristics and evaluation of the dissertation thesis

The dissertation thesis is the personal work of the PhD candidate in regard to the overall scientific study and is in essence a meaningful analysis of the scientific and applied achievements with certain theoretical and practical contributions to the practice. The results are presented consistently, based on the different objectives. The discussion is analytical and well-focused on the main purpose and objectives. The results are critically reviewed. The conclusions drawn by the PhD candidate are presented firmly, clearly and accurately, in accordance with the set aim and objectives and specifically reflect the results.

6. Contributions and significance of the work for science and practice

I find the following main contributions of the dissertation work:

Contributions of a primarily scientific and theoretical nature

1. Original contribution for Bulgaria is the identification of echocardiographic parameters applied in clinical practice, which detect differences between groups with gestational hypertension, preeclampsia and normotensive pregnant women.

2. For the first time in Bulgaria, the discriminatory abilities of the listed five biomarkers for distinguishing between pregnant patients with gestational hypertension and preeclampsia, and healthy normotensive pregnant women were studied.

3. A comprehensive analysis was carried out and associations were established between the echocardiographic parameters and the five biomarkers in pregnant women with gestational hypertension, preeclampsia and normotensive pregnancies.

Contributions of a primarily applied nature

1. An input document for the generation of a database and a database "Pregnant women with gestational hypertension/preeclampsia" were created.

2. The study encompassed a young population with an early, gender-specific risk factor for cardiovascular events, allowing for a further follow-up and control of other risk factors for the purpose of primary prevention.

3. The global longitudinal strain, based on speckle tracking, has been proven as a more sensitive modality for the detection of changes in the systolic function of both ventricles in this population, compared to the classically measured parameters.

4. Based on the observed differences in the echocardiographic parameters and biomarker levels, models for the evaluation and prediction of cardiovascular risk in such populations can be subsequently created.

8. Personal participation of the PhD candidate

I highly appreciate the personal participation of the PhD candidate in the preparation of the dissertation work, given that she was active in the all parts of research related to the study, as well as the processing and discussion of the results.

9. Author's summary

The author's summary corresponds to the content of the dissertation and the requirements for an author's summary. It reflects the main points of the study, and includes the most demonstrative figures and tables from the dissertation. There are also lists of publications and participations in scientific forums and projects, as well as the main scientific contributions of the PhD candidate.

CONCLUSION

The doctoral thesis of Dr. Dolina Gencheva contains scientific and applied and applied results, which represent an original contribution to science and meet all the requirements of the Law for academic staff development in the Republic of Bulgaria, the Regulations for the implementation of the Law and the respective Regulations of Medical University - Plovdiv. The presented materials and dissertation results are completely in accordance with the specific requirements of Medical University - Plovdiv.

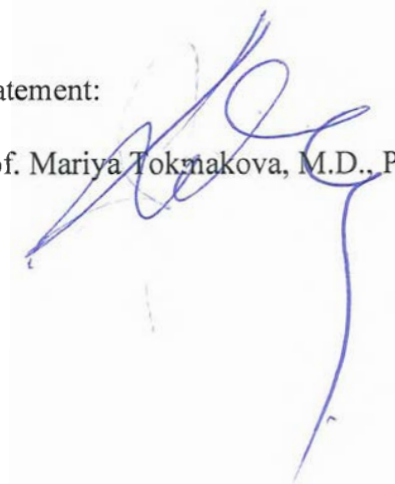
The dissertation work shows that the PhD candidate Dr. Gencheva possesses in-depth theoretical knowledge and professional skills in the scientific specialty Cardiology and demonstrates qualities and skills for independent scientific research.

In view of the above, I am confidently giving my positive assessment of the conducted study and propose to the honorable scientific jury to award the educational and scientific degree "Doctor of Philosophy" to Dr. Dolina Gencheva in a doctoral program in the scientific field of Cardiology.

01.10.2021 г.

Author of the statement:

(assoc. prof. Mariya Tokmakova, M.D., PhD)

A handwritten signature in blue ink, appearing to be 'M. Tokmakova', is written over a faint, illegible stamp or background text.