

REVIEW

by **Professor Dr. Stefan Nedev Stefanov, MD, PhD**

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of a dissertation for the award of a scientific degree

"Doctor of Science"

professional direction: 7.1. Medicine

doctoral program: "Rheumatology"

Department: "Propedeutics of Internal Diseases"

Author: Prof. Dr. Stoyanka Georgieva Vladeva, MD

on the topic: **Current aspects of the osteoporosis fracture risk**

1. General presentation of the procedure

The presented set of materials on paper and electronic media is in accordance with the Law For The Development Of Academic Staff In The Republic Of Bulgaria, as well as Art. 70 (1) of Section I. Acquisition of the educational and research degree "Doctor of Sciences" in the Regulations of the Medical University of Plovdiv from 28.01.2021. The doctoral student fulfills the required quantitative criteria according to the minimum national requirements, as well as those of the Medical University of Plovdiv in the scientific specialty "rheumatology" for conducting the present procedure.

2. Relevance of the topic and knowledge of the problem.

Osteoporosis is a disease with a high incidence in the elderly population, leading to fractures and health-economic problems, which are a significant medical problem of modern rheumatology. The performed diagnostics, treatment and prevention have been systematically analyzed by a number of international institutions such as the WHO, the IMF, the national health programs, etc. The thesis submitted for defense by Prof. Dr. Stoyanka Vladeva examines the fracture risk - a key point for the diagnosis of osteoporosis. This important tool is currently not actively used in our country, which leads to the wide spread of the disease, the lack of successful prevention and treatment. There is currently an emphasis on bone quality when examining patients, which is considered in fracture risk assessment.

The author is a long-time academic lecturer in rheumatology with solid clinical and instrumental training in the field of osteoporosis. She participated in the national expert meetings on acceptance of recommendations for good clinical practice, together with other specialties. She has been the manager of one of the osteoporosis centers in Bulgaria designated by the Order of the Ministry of Health since 2006 and an active public figure in combating the problem of bone health among the population.

3. Research methods

The studies conducted covered several modern research methods. The analysis of BMD data by DEXA, of a large group of examined people, allows to draw conclusions about the bone health of both the general Bulgarian population and,

for the first time in our country, of individual ethnic groups. The results of the non-ionizing new REMS osteodensitometry method prove the need to introduce bone quality assessment into modern rheumatology practice. Self-assessment and self-testing among patients for fracture risk is an important method for osteoporosis screening at different levels of health care with an effect on the prevention and treatment of the disease. The author uses a wide range of statistical methods to fulfill the purpose of her research.

4. Characterization and evaluation of the dissertation work

The dissertation is structured according to the rules and is balanced as a ratio between the individual sections. It is written in 173 standard pages and illustrated with 30 figures, 7 tables and 2 appendices. The results obtained are well discussed. The bibliography includes 255 literary sources - 7 of them are in Cyrillic and the rest are in Latin.

The content of Prof. Vladeva's scientific work concerns the examination of osteoporosis from the point of view of rheumatology. The literature review reflects the current state of the problem in the world and in Bulgaria, showing the excellent awareness of the author. The purpose of the dissertation is formulated precisely and clearly. The tasks to serve the set goal are very well defined.

Retrospectively evaluated the results of DXA examinations of an impressive group of 12,478 people,

DXA scans of 1573 individuals (812 Bulgarians and 761 Bulgarian Turks) aged 59 ± 10 years (range 16-86 years) were evaluated.

A total of 324 women with an average age of 62 ± 12 years were included in the REMS study with an Echolight densitometer. A study was conducted to assess the FS of the lumbar spine among Bulgarian women. For the patient population consisting of 100 people, BMD was measured using REMS technology.

A questionnaire study among patients who underwent REMS osteodensitometry determined the self-assessment of patients on the problem of osteoporosis.

The results and discussion are presented synthesized by group.

The data show important facts that the total prevalence of low lumbar spine BMD is 6,084/9,336 individuals (65.2%). 3,502/9,336 individuals (37.5%) had osteopenia and 2,582/9,336 individuals (27.7%) had osteoporosis. The overall prevalence of low femoral neck BMD was 2,036/3,140 (64.8%). 1,641/3,140 individuals (52.3%) were classified as osteopenic and 395/3,140 individuals (12.6%) were classified as osteoporotic. FRAX was analyzed and the mean values for FRAX MOF and FRAX HF increased in the age decades, while the age interval 80-89 years showed the highest average value for both groups.

There is a summary of the assessment of the epidemiology of bone mineral density by DXA, and on the other hand the possibilities of conducting FRAX assessment among patients and nursing care.

It has been established that Bulgarian Turks show a significantly lower mean value of BMD and T-scores measured at axial locations and a higher risk of fractures compared to the Bulgarian ethnic group.

The analysis of the patients' self-assessment is done for the first time in Bulgaria, and the results show the need to educate patients about the prevention of osteoporosis. The dissertation has defined 12 main conclusions that summarize the results of the observations. 6 contributions highlighting the merits of the dissertation work are highlighted.

5. Evaluation of the publications and personal contribution of the doctoral student

In connection with the dissertation, Prof. Dr. Stoyanka Vladeva has presented a total of 37 publications, of which 27 are indexed in Scopus or Web of science. The publications present the data from the conducted studies, part of the dissertation work, as well as clinical cases of practical importance.

These include presented results of important contributions to the field of theoretical and applied rheumatology regarding osteoporosis. Co-authorship with leading world and national scientist in the field of osteoporosis is a sufficient sign for the quality of the scientific works published in the most prestigious journals and events.

The list of citations includes 27 citations, outside the procedures for scientific titles. 20 of the citations are in prestigious journals indexed in the world databases. Some of them are by publications authored by the world's scientific leaders on the problem of fracture risk, such as Prof. Maria Luisa Brandi, Prof. Olga Lesnyak, Prof. John Kanis, etc. which shows the worldwide recognition of Prof. Vladeva's works.

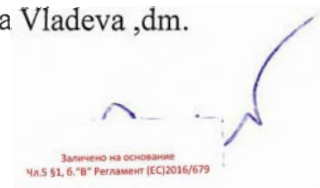
I am convinced that the doctoral student achieved the research that was conducted.

6. Abstract

The attached abstract has a volume of 67 pages, corresponding to the dissertation work and structured according to the normative documents.

CONCLUSION

The dissertation work "Actual aspects of osteoporotic fracture risk" fully meets the requirements of DASRBA. I am convinced that the work was prepared independently, containing theoretical summaries and solutions to important scientific and applied problems, which correspond to modern achievements and represent a significant and original contribution to science. Therefore, I give my positive assessment of the scientific work and propose to the Scientific Jury to award the scientific degree "Doctor of Sciences" in the Department of Higher Education: 7 Health and Sports; Professional field: 7.1 Medicine; Scientific specialty: Rheumatology to Prof. Dr. Stoyanka Georgieva Vladeva ,dm.



17.12.2023

Prof. Stefan Nedev Stefanov, DM, PhD