МЕДИЦИНСКИ УНИВЕРСИТЕТ
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REVIEW

by Prof. Dr. Anastas Zgurov Batalov, MD,

Head of the Department "Propaedeutics of Internal Diseases" of the Medical University - Plovdiv

Head of Rheumatology Clinic,

UMBAL "Kaspela"- Plovdiv,

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**

The presented set of materials in electronic and paper form is in accordance with the Procedure for the acquisition of the "Doctor of Sciences" degree at the MU - Plovdiv; Regulations of the Medical University –Plovdiv. The requirements of

DASRBA and the Rules for its implementation with the minimum requirements, as well as the criteria of the Regulation of the Medical University of Plovdiv for the acquisition of NS, have been met.

Prof. Vladeva was born in 1962. She graduated as a doctor in 1987 from the Medical University of Plovdiv. In 1996, she completed full-time doctoral studies at the Rheumatology Clinic, Medical UniversitySofia, and obtained a doctorate degree after defending a dissertation on the topic "Clinical-therapeutic and immunological studies in patients with rheumatoid arthritis". The doctoral candidate has clinical specialties in internal medicine - since 1998, rheumatology - since 2003 and cardiology - since 2021. In 1998, she became a chief assistant professor, and in 2012, she has been awarded with the title associate professor of Rheumatology at the Department of Propaedeutics of Internal Diseases and the Department of Health care of the Faculty of Medicine, TrakiaUniversity, Stara Zagora. Since April 2014, she has been elected as a professor of Rheumatology at the Faculty of Medicine of the Trakia University, Stara Zagora.

Prof. Vladeva is an established rheumatologist with long clinical experience, numerous national and international qualifications. She was the head of the Rheumatology Clinic at UMBAL" Prof. Dr. Stoyan Kirkovich" Stara Zagora. She has a long-standing pre-hospital rheumatology practice with dispensary patients and trained residents.

Prof. Vladeva is an initiator of the national movement to fight osteoporosis in Bulgaria, as well as the Chairman of the Association "Stara Zagora against Osteoporosis" since 2001.She is a member of the Bulgarian Medical Society for Osteoporosis and Osteoarthritis and the Bulgarian Rheumatology Society. She has numerous books, lectures and media appearances on the issue of diagnosis and prevention to support patients with osteoporosis.

Relevance of the topic

Osteoporosis is a socially significant disease with a high incidence in the elderly population, leading to fractures and health-economic problems. Osteoporotic fractures are projected to increase by 22% over the next 30 years. Osteoporosis is a significant medical problem of modern rheumatology. The conducted scientific research and health approaches have been systematically analyzed by a number of international institutions such as the WHO, the IMF, etc. The thesis submitted for defense by Prof. Dr. Stoyanka Vladeva examines the fracture risk - a key point for the diagnosis of osteoporosis. Although the national recommendations for influencing osteoporosis obligate the study of FRAX, it is not actually implemented in the medical practice. The modern world trends for emphasizing the fracture risk in the approach to osteoporosis determine that the topic of the dissertation work is innovative and with a significant contribution to science.

Knowing the problem

The doctoral student's interest in osteoporosis dates back many years, beginning with reviews and a monograph intended for general practitioners. Her studies of the changes on the auditory ossicles in patients diagnosed with osteoporosis are very important. The need for population studies ofBMD has directed Prof. Vladeva to conduct a large-scale epidemiological study. Following the application of the innovative approaches such as ultrasound, she introduced in her practice the REMS method for conducting prospective clinical studies. The author of the dissertation made an analysis of an impressive volume of literature review on the world's scientific publications on the subject as a justification of the set goal. An extensive practical mastery of the applied methodologies and the possibilities for detailed handling in the undertaken scientific studies have been demonstrated.

Structure and content of the dissertation

The content of Prof. Vladeva's scientific work concerns the problems of osteoporosis and aspects of fracture risk. The dissertation is structured according to the rules and is balanced as a ratio between the individual sections. It contains 173 standard typewritten pages, with 30 figures, 7 tables and 2 appendices used for illustration.

The literary review reflects the current state of the problem in the world and in our country and shows the excellent literary awareness of the author. The

bibliography includes 255 literary sources - 7 of them are in Cyrillic and the rest are in Latin.

The purpose of the dissertation is formulated precisely and clearly. The tasks towards the set goal are very well defined. The author uses a wide range of statistical methods processed by a modern statistical software such as SPSS.

The results and discussion are presented together for the solution of the individual tasks.

SummarizingDXA scans, she presents the largest epidemiological data on the prevalence of low BMD of the axial skeleton for 12,478 individuals in Bulgaria, as well as FRAX fracture risk data. Additionally, within the framework of the study, BMD and T-score were compared between the Bulgarian ethnic group (Bulgarians) and the Turkish ethnic group from Bulgaria (Bulgarian Turks) for 1573 individuals using DXA. The overall prevalence of low BMD at the lumbar spine was 65.2% and at the femoral neck was 64.8%. The overall incidence of osteoporosis at the lumbar spine was 27.7% and at the femoral neck was 12.6%, which is lower than the values reported in previous Bulgarian studies. Bulgarian Turks showed significantly lower mean BMD and T-scores measured at axial sites and a higher fracture risk compared to the Bulgarian ethnic group.

This is the first study to present results for a REMS-based fragility index FS of the lumbar spine in Bulgarian women. According to the combined matrix REMS

T-score and FS values, using the interpretation table, a classification of patients was made in the risk classes from R1 to R7, corresponding to the risk of fractures for MOF within 5 years, and we compared their characteristics and parameters obtained by REMS time. These are important data on the bone quality of a representative sample of the Bulgarian population.

The multivariate analysis of risk factors assessed with REMS is innovative. Its results show that Prof. Vladeva has correctly directed her scientific research in a direction in which the new changes to the well-established global fracture risk calculators are required.

The result of an assessment of the patients' self-awareness of the disease osteoporosis and of the fracture risk associated with it, which defines the awareness of osteoporosis, is interesting. The patients' low awareness of the disease is a fact on which the existing low compliance with the therapy also depends.

The dissertation student has defined 12 main conclusions that summarize the results of the observations. 6 contributions highlighting the merits of the dissertation work are highlighted.

Contributions and significance of the development for science and practice

The dissertation contains scientific-theoretical and scientific-applied results that represent a significant contribution to the science and rheumatology. They validate the extensive practical-theoretical research carried out in an original way.

I accept the formulated contributions of an original nature and I believe that they objectively reflect the real results. I find the following contributions as more significant:

- For the first time in Bulgaria, an epidemiological study was conducted on hip fracture risk;

- For the first time, a specific national model for predicting the osteoporotic fracture risk, valid for the Bulgarian population, has been developed;

- For the first time, results are presented for the fracture risk through the assessment of bone quality, through the innovative REMS methodology on a representative sample of women;

-For the first time, factors from multivariate analysis influencing the BMD_{US} of the axial skeleton, measured by REMSare evaluated.

Publication activity and scientometrics

The doctoral student fulfills the quantitative criteria for the minimum national and intra-university requirements for scientometrics, evident from the attached reference-declaration.

Indicator group	Requirement for Doctor of Science by regulation/points/	Doctor of Science Fulfilled points
A. Dissertation, PhD	50	50
Б.	100	100
B.(published monograph) Indicator 3		
Г. publications and reports	100	587
Д.citations	150	335

The doctoral student has attached a total of 37 titles of scientific works, publications and participations in scientific forums and appearances in the country and abroad. Of these, 27 were published in scientific journals, referenced and indexed in world-renowned databases (Scopus; Web of Science) in the country and abroad, and 10 publications and reports were published in non-indexed journals with scientific review or in edited collective volumes. Prof. Vladeva is the first author of 16 of the publications, the second author of 4 of them, and co-author of the rest.

A reference is presented for 20 citations in scientific publications, referenced and indexed in world-renowned databases and 7 citations in national scientific journals.

Conclusion

The dissertation work "Current aspects of the osteoporosis 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 members of the scientific jury to award the scientific degree "Doctor of Sciences" in the Department of Higher Education: 7 Health and sports; Professional direction: 7.1 Medicine; Scientific specialty: Rheumatology of Prof. Dr. Stoyanka Georgieva Vladeva, dm.

Заличено на основание
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17.12.2023 Prof. Dr. Anastas Zgurov Batalov,

MD