

REVIEW

By Professor Dr. Stoyanka Tsvyatkova Zheleva-Popova, PhD,

Habilitated in the scientific specialty: "Social medicine and organization of health care and pharmacy", an internal member of the Scientific Jury selected by the FC of the Faculty of "Public Health" at the University of Varna (Protocol № 189/05.07.2022) and appointed by order № P-109-284/11.07.2022 of the Rector of the Medical University "Prof. Dr. Paraskev Stoyanov". According to Protocol № 1/14.07.2022 of the first meeting of the Scientific Jury, I am appointed to prepare a review.

According to the procedure for awarding the scientific degree "**Doctor of Sciences**" in the field of higher education: 7. Health care and sports, professional direction: 7.1. Medicine, specialty: Social medicine and organization of health care and pharmacy of Assoc. prof. Dr. Desislava Ivanova Vankova, PhD with a theme of the dissertation "**INTEGRATIVE MEDICINE – A HOLISTIC CONCEPTUAL MODEL, SCIENTIFIC AND EDUCATIONAL APPROACHES**"

All procedural requirements provided for in Section VI of the Regulation regarding the Development of the Academic Staff at Medical University of Varna have been met. The candidate has presented in a neat form a complete set of materials on paper and electronic media in accordance with Art. 89 paragraph 4 of the Procedure for the acquisition of the scientific degree "Doctor of Sciences" from the cited Regulations.

Short biography data and career development of the candidate

Desislava Vankova graduated from the English language school "Geo Milev", Burgas with a gold medal, and in 1993 from the Medical University "Prof. Dr. P. Stoyanov" - Varna, specialty "Medicine". In the period 1998-1999 is studying in a master's program in public health - Maastricht University, The Netherlands, graduating with a master's thesis defense "PUBLIC HEALTH HUMAN CAPACITY BUILDING IN BULGARIA" with an MPH degree, which has predetermined the direction of her future professional development. In 2001 acquired a specialty in Social Medicine and Healthcare Organization. After successfully defending a dissertation on the topic "HEALTH-RELATED QUALITY OF LIFE IN THE COMMUNITY", she was awarded the educational and scientific degree "Doctor/PhD" in the scientific specialty "Social Medicine and Organization of Health Care and Pharmacy" (2013).

Dr. Desislava Vankova began her working career as a resident physician in the Internal Department and as a general practitioner in the Burgas and Varna regions. During the period 1997-2001 she worked as an epidemiologist and specialist in social medicine in the Hygiene and Epidemiological Inspection – Varna on anti-epidemic control; public health analysis. In the period 2001 – 2015, he worked in GlaxoSmithKline-Bulgaria to the position of Key Account Manager.

Her academic career started in 1999 as a part-time assistant at Medical University of Varna, and since 2016 she has been senior assistant in the Department of social medicine and healthcare organization at the University of Varna. Since 2018 she holds the academic position of **Associate Professor** in the same department where she is currently. She is lecturing on social medicine and health promotion for students from the specialties "healthcare management" and "speech therapy", "nurse" and "midwife", as well as seminars on social medicine for medical and dental students (Bulgarian- and English-language training).

The internship in the pharmaceutical business supports her work in the academic management of the research clinical studies, as the head of the Scientific Department to the Vice-Rector "Science and Research" at the Medical University of Varna, in which position she has been since 01/11/2015 (and continues).

Assoc. Prof. Vankova increases her qualifications by participating in numerous courses, seminars in Bulgaria and abroad mainly in the field of *Clinical Epidemiology, Health Promotion, Human Resources Development, Health Technology Assessment, Research Methodology and academic writing; History of medicine*. Prof. Vankova also participates in courses *to increase her pedagogical competence*.

Major focus in her continuing education are the **Alternative and Complementary Medicine and Integrative Medicine** (Introduction to Integrative oncology for Healthcare professionals, 06-09.2021, with certification from NHS); Integrative oncology: Your life with cancer - two life events, Our life with cancer - two life events, 26-28 Sept. and 10-12 Oct. 2020 – the UK's integrative cancer care Charity Yes to Life). Prof. Vankova is *a certified teacher* at the German Academy of Homeopathy and Naturopathy (DAHN) since 2016; German Academy of Homeopathy and Naturopathy (DAHN) and to the German Homeopathic Union (DHU).

The purposefulness in her continuing education is impressive, which inevitably led to the current dissertation work.

Prof. Vankova participated in two projects related to the dissertation work: as a representative for Bulgaria in the international scientific project JPIAMR "GIFTS-AMR" and head of the working group "Increasing the accessibility of information of T&CM medicinal products for infections". She is the head of a project with the support of the university "Nauka" Fund: "Scientific approaches to complementary and alternative medicine - concept, context, quality of life".

Assoc. Prof. Desislava Vankova is the supervisor of two successfully defended doctoral students in 2019 and 2021.

Fluent in English and Russian and basic French.

She is a member of a number of professional and scientific organizations, including the Bulgarian Medical Association, the Varna branch of the Union of Scientists, the Bulgarian Public Health Association, the European Society of Integrative Medicine etc.

Significance and relevance of the dissertation work and comprehensiveness of the set goals and objectives

The significance of the presented dissertation work is predetermined by the choice of the topic and the focus on integrative health care as an opportunity to achieve better health of the population through a balanced and person-oriented application of all known scientifically proven methods of treatment, prevention and promotion.

The topic rightly attracts the attention of more and more researchers and practitioners worldwide (to whom we can also include the author of the dissertation in focus), which has its serious justification. Modern health care enjoys rapid technological progress in diagnostic and treatment options, but on the other hand is increasingly trapped in it, leading to healthcare parcelization, dehumanization, pharmacomania and polypharmacy, high costs and low patient satisfaction, whose demands, awareness and freedom of choice are growing. The strengthening of the "green" movements among human communities and the orientation of many people towards nature-based living are reviving interest and increasing demand for non-conventional methods of treatment.

The increasingly widespread practice of medicine, which has acquired the name "complementary and alternative" (CAM), is tied to many unknowns related to the effectiveness and safety of its application, the qualifications of the CAM-practitioners. How should CAM methods be considered - as an alternative, as complementary, and is integration with conventional medicine possible, and to what extent? Associate Professor Desislava Vankova seeks answers to these and other questions in the concept of "Integrative Medicine" - definition, content, scientific justification, need for adequately trained specialists to apply it.

Collecting and summarizing a huge volume of scientific literature, official documents, materials on the historical and scientific development of complementary and alternative medicine, and its place in Bulgarian healthcare, studying the awareness, opinions, attitudes and interests of practicing healthcare professionals and students, Vankova sets herself the ambitious goal to build a conceptual model for integrative medicine and a conceptual educational model of the competencies related to integrative medicine in the Bulgarian context. This makes the developed dissertation extremely timely, significant and provocative.

The topic of the research is current and consistent with the national "Strategy for the development of scientific research and the current scientific priorities of the Medical University-Varna. It is a reflection of both the scientific, teaching and clinical interests, and searches, I would say both nature and need of the dissertation researcher.

General characteristics of the dissertation

The dissertation, developed by Assoc. Prof. Dr. Desislava Vankova, has a total volume of 263 pages, incl. 5 appendices, 9 tables and 38 figures. In terms of methodology and composition, it was built according to the accepted standard requirements in the field, including well-balanced in volume: Introduction; Literature review; Aim, objectives, design, methodology and organization of the study; Results of own research and discussion, Conclusions, recommendations and contributions, Bibliography; Applications. At the beginning of the dissertation, there are lists of the used abbreviations related to the study and the titles of the presented tables, figures and appendices, which facilitates the perception of the content.

The bibliographic reference is correctly presented and includes an impressive number of literature sources - 714, of which 92 are in Cyrillic and 622 are in Latin.

Literature review and comprehension of the problem

The literature review is structured in 4 parts. Logically, it introduces a presentation of key terms and definitions in integrative medicine (IM), based on a review and analysis of all the existing definitions related to IM, which is the result of serious research. The author reasonably approaches it, proceeding from the understanding of the IM as a heterogeneous concept, including and uniting many separately existing concepts that require terminological clarification.

Examining the emergence of IM, Vankova reports the difficulties in terminology related to the differences she finds at an international level regarding the reference of specific methods to traditional, complementary or alternative medicine.

The reasons for the increasing demand for non-conventional methods of prevention and treatment on a global scale are indicated, related to weaknesses in the organization of health care systems, the powerlessness of conventional medicine in certain conditions (despite its colossal progress), as well as the increased demands and awareness of patients, and how WHO responded to them, supporting the inclusion of CAM and the development of the idea of integrative medicine, seeking the benefits of different medical approaches to improve health. The author translates

numerous examples of CAM application in different countries, with proven effectiveness, which WHO supports.

As a result of a very extensive, thorough and critical search from professional and institutional sources, the author presents a taxonomy of the definitions of IM used in health care, in which, according to Vankova, the unifying factor is the provision of maximum quality and individualized medical care. They serve as a basis later in the dissertation work to develop a conceptual model of integrative medicine.

The history of the idea and practice of IM is traced. Despite the endeavours for integration and the increasingly better cooperation between the providers of conventional and CAM-therapies, the author found a lack of a universal conceptual model for IM, which is addressed in the dissertation work. Assoc. Prof. Vankova devotes a special part to the analysis and synthesis of strategic documents, events, normative acts related to the development of IM, the chronological continuum of which is summarized as a time-table in Figure 1. As an integral part of the political documents related to the need for development of IM, the author examines the right of access to health and of choice. Key events and facts in the history of integrative medicine in a period of nearly half a century (1978 to 2021) have been traced and described.

Normative acts (directives, legal and regulatory provisions) regulating education, practice and access to medicinal products in the field of IM were sought, with which the EU seeks to harmonize the legislation for all member states, with the main existing differences concerning the definition of KAM; persons having the right to practice it; authorization systems, reimbursement and funding resources. Documents that Bulgaria has ratified and accepted are also cited, recognizing the right to access and use all possible methods for a beneficial effect on health. The analysis of numerous sources shows that the exchange of international research experience and coordinated actions are crucial for the development of the science of "integrative medicine" and for the regulation of CAM professions and products across the EU.

The integration of CAM to the conventional medicine Prof. Vankova related to the promotion of high-quality research to provide reliable scientific information about the safety, effectiveness and costs of CAM, serving as an evidence base for making informed policy decisions about CAM and its place in IM. Modern scientific studies and applied approaches have been searched for, analyzed and presented in Part 3 of the Literature review in a very thorough and multifaceted manner, concrete examples, facts, case studies have been given. A gradual increase over the last 30 years of scientific research in the field of integrative medicine has been noted, both in quantity and quality, but at the same time Assoc. Prof. Vankova points out a number of limitations of research in the field of CAM, such as the importance of human resources, the main research questions, research deficit of the therapist-patient relationship, motivating, empowering and assisting patients in taking care of their own health, positive behavior change, which are the main goals of IM. Examining various aspects of these studies, Prof. Vankova also touches on much narrower topical issues - antimicrobial and antibiotic resistance; the evaluation of integrative interventions in medicine; study the cumulative effect of the application of all possible methods of treatment and prevention in the individualized approach in IM; introduces the relationship between IM and ecology, health globalization, "One Health" movement.

This part deserves a very high evaluation rate. It provides a huge amount of information and is the result of the author's broad competence not only in the field of the developed topic, but also in the field of epidemiology, health promotion, global health, as well as an enormous amount of work in searching for, systematizing and analysing scientific research on IM.

The last topic of the literature review presents the educational models in the field of IM, derived from the world and European experience with the aim of being adapted to the Bulgarian healing traditions and educational standards. Here, Vankova cites authors advocating the

need for medical universities to provide not only quality traditional education, but to include new areas in medical science and practice, aimed on the one hand at education that nurtures and develops the personality, and on the other with the inclusion of all other components of IM. Citing numerous examples from the medical education in the USA and Europe, the author notes the existence of a huge variety of forms (basic and postgraduate training) and study disciplines (compulsory or elective), as well as a wide variety of public and private higher education institutions in which the training takes place. It considers the integration of CAM practices not only in the training and practice of doctors, but also in other medical professionals, especially nurses and midwives.

A number of documents were investigated to support the development of IM as part of medical education and specialization. Attention is also paid to the issue of the licensing of certain CAM professions. The analysis of sources revealing the development of IM education in Europe shows that there is still a lack of standards and a clear political will to unite conventional and non-conventional in medical education at the pan-European level.

The factors necessitating the development of educational programs in IM as part of medical education are indicated in a synthesized form. Considering that the creation of IM-programs, combining all possible methods for the benefit of health, should be based on the preliminary research of the awareness, attitudes, behaviours and interests of the professional and student communities in relation to IM, the author finds an absence in Bulgaria of similar studies.

A detailed review of medical education illustrates the strengths, weaknesses, challenges, and issues facing IM education.

In the literature review, methodological questions based on the study of international research experience and especially the design of the studies are represented.

The presented literature review, based on an extremely rich bibliographic reference, shows the extremely broad knowledge and competencies of the author in the field of the subject under consideration. The thoroughly researched international experience in the direction of the development of medicine as an individualized, integrative care, directs Assoc. Professor Vankova to the aim, the objectives and the adequate methodology developed by the author for her original studies in the present dissertation work.

Aim, objectives, design, methodology and organisation of the study

The study is based on a perfectly constructed and well-founded methodology, presented in great detail, clearly and precisely.

The aim and objectives are correctly formulated. The author's aim is to investigate the concept of "integrative medicine" and its place in science and education in Bulgaria, for the achievement of which 5 specific objectives have been set.

The main hypothesis is related to the current development and content of the innovative concept "integrative medicine". The author also puts forward 9 hypotheses related to the needs assessment related to education in the field of CAM and integrative medicine through a sociological survey of the position of doctors, pharmacists and students (knowledge, awareness, attitudes and behaviors).

The study was built on the basis of converging parallel mixed-method design, including collection, analysis and mixing of quantitative and qualitative data, in the application of which Assoc. prof. Vankova has already accumulated experience. The study design is detailed and well illustrated in Figure 4.

The implementation of the study is in four chronologically and logically following phases, tied to the tasks of the study:

First phase - Creation of a holistic conceptual model of integrative medicine and research of its roots and modern development (2019-2021).

Second phase - Quantitative and qualitative survey of educational needs among students and professionals (2021-2022). Four types of electronically generated questionnaires have been developed for this purpose.

Third phase - Dynamic Delphi study in real time in two rounds with 3 expert panels - adaptation of the classical Delphi, due to the restrictions imposed by the COVID-19 pandemic (February - May 2022)

Fourth phase - Development of a conceptual educational model for achieving competencies related to integrative medicine and CAM (2021-2022).

The phases of the study are described in great detail with correctly defined logical units [four target groups with corresponding inclusion criteria: general practitioners (n=114), pharmacists and assistant pharmacists (n=71), medical students (n=145), and pharmacy students (n=63), the developed instruments in the second and third phases, applied methods and the ethical framework.

The methods used are skillfully selected in accordance with the aim and objectives of the study (also presented in detail):

- Documentary historiographical method - study of the modern history of IM;
- Scientific literature analysis of the information from publications covering the second half of the XXth century until today, related to IM;
- Quantitative sociological methods for collecting information and analysis: four direct individual surveys, mostly in google-form;
- Statistical methods - descriptive analysis, non-parametric Chi-Squared test for hypothesis testing. The specialized software IBM SPSS Statistics, v. 24 is used;
- Graphical method - for presenting the results of statistical data;
- Delphi study - described extensively in the survey design as the third phase;

I highly appreciate the author's approach in developing the research methodology, the tools used, subject to the specifics of the collected information from the relevant groups of respondents in reliable electronic platforms, which allows achieving the aim and obtaining an adequate answer to the objectives solved in the dissertation, as well as and the successful use of graphic techniques to visually represent the phases of the study.

The entire research protocol was approved by the Ethics Committee at the Medical University of Varna (Protocols indicated).

A thorough and precise approach was taken to presenting the **RESULTS OF THE OWN STUDY AND THEIR DISCUSSION IN THE THIRD CHAPTER** of the dissertation work "**Holistic conceptual model. Results of own research and discussion**", comprising four parts:

I. Based on the fact that "**integrative medicine**" is a new term in Bulgaria, the author dedicates the first part to a conceptual clarification of the concept, viewing IM as an opportunity to unite conventional medicine, CAM and health promotion, as a complete/holistic

approach to health and the disease. The emergence of the concept of "holism" and its development, its application in medicine and connection nowadays with the global movement "One Health" are traced, arriving at the term "integrative health", which includes care for health, not only for disease, with all possible methods.

For the purpose of creating a holistic conceptual model of IM (implementation of the second research objective), Vankova presents the identified and terminologically clarified key concepts in integrative medicine, which found a place in the developed "Brief Terminological Guide to Integrative Medicine", presented to the dissertation in Appendix 1 .

In fulfillment of the third research objective of the dissertation, an **original holistic conceptual model** has been built and proposed, including the five building elements [1. Medical education and postgraduate training; 2. Conventional Western medicine; 3. Complementary and alternative medicine (CAM); 4. Scientific foundations, approaches and evidence; 5. Health promotion and preventive medicine], *the three defined characteristics of integrative medicine* [philosophy, structure and process], as well as *the three principles* [1. Coherence; 2. Heterogeneity, equality, tolerance; 3. Effectiveness and health outcomes]. The model is presented graphically in Figure 5, which illustrates the author's expanded understanding and hence definition of IM.

I consider the model presented by Prof. Vankova as a synthesized expression of the author's idea and deep conviction that IM is not a simple combination, but a highly organized system aimed at achieving optimal health and well-being, in the context of interactions between all participants in the health system, including and patients/citizens. The author views IM as an alternative to the dominant approach to disease, fragmentation of health care and economic inefficiency, and dissatisfaction with the health system, supporting this understanding with illustrative examples of good practices in the US and Europe.

II. Research, analysis and discussion on the historical roots and current state of integrative medicine in Bulgaria, as part of the European educational and research space, are presented in the second part.

Applying the historical-documentary method, Vankova makes a very detailed review of the **historical roots and current state of CAM in Bulgaria**, where she presents interesting facts. Researching very skilfully and thoroughly a huge historical material - both written sources and artifacts stored in the Ethnographic and Historical Museums, presenting evidence of the practice of various healing methods in Bulgaria, the author explores the Bulgarian healing traditions preserved through "folk medicine" (narodna medicina) from antiquity, the Middle Ages till present days. "Folk medicine" is seen as the Bulgarian contribution to the European CAM heritage. The author examines not only traditional Bulgarian, but also methods of treatment "imported" from China, India, Tibet, Japan, the Middle East, the so called "Eastern medicine", gives examples of their application, scientific research, trainings.

The most common practices in our country are presented - homeopathy, manual medicine, acupuncture and acupressure, diet therapy, art therapy and paneurthymia, halotherapy, circadian medicine, etc. This part is saturated with a lot of data, which speaks of the author's broad awareness of the KAM applied in our country, their regulation, as well as the existing forms of trainings.

The diversity of cultural and historical traditions in medical education determines the difference in the forms under which the education and science of IM is organized in Europe, incl. and in our country. Based on the understanding that the practice of IM requires solidly prepared health professionals of a new type, Assoc. Prof. Vankova researches and summarizes the education in integrative medicine and CAM in 10 European archetypes based on dominant activities

(educational and scientific), implementation bases (in institutional or non-institutional setting), form of inclusion and other characteristics. Each of the presented archetypes is supported by examples of good global practices that the author has searched for, as well as by strategic documents of the WHO in the direction of the need to integrate CAM and conventional medicine in the education of health professionals, especially at the level of Primary health care. The forms of training applied in our country, included in the relevant archetypes, have been studied.

Discussing the unfavorable health indicators of the Bulgarian population, negative practices, such as overuse of antibiotics in the outpatients care, underestimated or neglected preventive and promotional activity in the healthcare system, Vankova accepts that following the trends and the proven CAM-needs in Europe, integrative medicine can be a key to a solution of a number of problems in healthcare in our country, if it is understood at the political and educational level by the stakeholders.

At the same time, summarizing these parts of the dissertation, Vankova responds the WHO's call for more research on the effectiveness and safety of CAM. The conducted own research is her contribution to this appeal and can be seen as an important stage in the development of education in IM and CAM at a national context.

III. The original own research aims to assess the awareness, attitudes and educational needs of professionals and students regarding CAM and IM - questions underlying the author's hypotheses. They are based on the opinions, attitudes, behaviors and interests of GPs, pharmacists and assistant pharmacists, and medical and pharmacy students, through an individual online survey, as well as a Dynamic Delphi survey of experts in the field. When analyzing the data, the four target groups in the study were combined into two main groups: 1) Professional group - general practitioners, pharmacists and assistant pharmacists from the Varna region; 2) Student group - medical and pharmacy students mainly from the Medical University of Varna.

The structure of the questionnaires is subordinated to the research objectives and allows discussions in five areas: 1. awareness about CAM (definition, individual methods and systems, sources of information related to CAM); 2. attitudes and behaviors related to CAM; 3. interests and need for training in the field of CAM; 4. awareness of integrative medicine; 5. additional social, demographic and professional characteristics.

The socio-demographic characteristics of the respondents - practicing family doctors, pharmacists and assistant pharmacists - age (the majority 36-55 years old), professional experience (predominantly over 10 years), as well as those of the respondents - students (mostly from the above courses) provide a basis for sufficient expertise on the researched issues.

There is an interest in CAM and integrative medicine both among the group of professionals and among students. The hypothesis that there is no difference in terms of **awareness** about CAM between the groups of students and professionals is confirmed - more than half of both groups need more information about the concept of CAM. The most recognizable among both professionals and students is the healing system "homeopathy", less popular are Schussler therapy, yoga, acupuncture, phytotherapy. There are methods traditional to Eastern cultures or considered conventional medicine for which awareness among respondents is very low. The preferred forms for enriching the knowledge of CAM are indicated - among professionals, these are the courses of the European School of Clinical Homeopathy, the Academy of Schussler Therapy and Naturopathy, and among students - the elective course in homeopathy.

The majority of practitioners as well as students use CAM methods for their personal or family health. The most applied methods are phytotherapy, homeopathy, apitherapy, folk medicine, and the answers of both groups are almost identical. Regarding the recommendations of

general practitioners and pharmacists to patients in the context of medical care and pharmaceutical care respectively, the same familiar methods are used. Methods and products that have evidence of effectiveness and lack of interaction with the main therapy are recommended. Again, one of the main characteristics of CAM stands out - the relationship, the trust between doctor/pharmacist and patient. Here, the author draws attention to the different ways of registering CAM products - under the Act on Medicinal Products and Pharmacies in Human Medicine (homeopathic medicines, Schussler's salts and others) or under the Food Act (nutritional supplements).

An important part of the research, related to one of the main objectives of the dissertation work, is the **needs-assessment educational survey measuring knowledge, attitudes and practices (KAP survey) towards CAM**, both as undergraduate university education and as post-graduate qualifications, certifications.

Among both of the targeted groups, the understanding that CAM should be included in medical education is strongly supported (with the note that the current training does not give them the necessary knowledge in this area). The analysis of the freely expressed opinion shows a very serious and responsible attitude from both professionals and students, setting the condition that scientific approaches should be leading in evaluating the effectiveness and efficiency of CAM. The form by which the CAM could be included in the training should be tailored to the requirements of the regulated professions.

Another group of discussed questions is aimed at researching **awareness regarding integrative medicine**. The results show that "integrative medicine" is a relatively unknown concept or is understood one-sidedly, and again raise the question of the need for more information.

Here again the position of the author to accept different points of view is evident. According to her, the debate about the scientific validity and the place of CAM in education will continue due to the numerous factors that support or hinder the introduction of the principles of integrative medicine in modern healthcare.

It should be noted that the format of the questionnaires allowing for the addition of comments from relevant respondents, which are quoted in the dissertation, allows for qualitative interpretation to be added and to augment the analysis and discussion. The key messages emerging from the narratives shared in the study are: need for scientific evidence and education.

Although the term integrative medicine is officially recognized in our country, the deep search for sources and contacts with official Bulgarian institutions, the author found that its content is far more limited compared to the definitions adopted in the leading countries in the field, mainly including integration of CAM with conventional medicine. There is an urgent need for a clear definition of this dynamically developing scientific and applied field. From this point of view, **the Delphi survey with its conduct, results and discussion is an essential part of the dissertation work.**

The study included experts (university or certified teachers) divided, according to the leading professional expertise, into three panels: 1. political management expert panel; 2. an institutional expert panel of professionals who develop and approve the curricula; and 3. teaching expert panel - university and certified teachers in the field of CAM and health promotion.

The panelists-experts express support for the need integrative medicine and its constituent elements - CAM, health promotion and disease prevention to find a place in the education of the health specialties. The forms in which to conduct the training are discussed, as well as the need for teachers with knowledge and competences in the field of KAM and approaches to health promotion. A key outcome of the Delphi study was the achievement of consensus on the formulation of an advanced definition of integrative medicine, which is a historic necessity for modern health care. Since the term is used more and more often in health policy documents,

providing the definition to the Office for Language Reference and Consultations, the Institute of Bulgarian Language at the Bulgarian Academy of Sciences will help to achieve consensus in the perception of the concept by the Bulgarian researchers, as well as by any citizen who is interested. The second contribution is the expansion of the concept to include "health promotion" to the possible approaches to health improvement and in favor of integrative healthcare.

The conduct of the study itself (individual online survey and Delphi study) has an educational contribution through the opportunity for the participants to get to know and discuss the definition of integrative medicine provided to them.

IV. The creation of a conceptual educational model for the achievement of key and functional competencies related to integrative medicine follows the implementation of objective № 5 of the dissertation. The construction of the educational model is based on a broad foundation, including the following elements:

- The conducted empirical research on awareness, attitudes and practices in the field of CAM and IM and the Dynamic Delphi survey provide an opportunity to assess the needs of education in this area.
- The large-scale scientific search of the existing world experience. Credible sources are cited primarily from North America, where it was first introduced as a new academic discipline in American medical universities that sought to combine Western conventional medicine and CAM as part of educational strategies to effectively transform medical education. Much evidence has been found showing that IM education and research in Europe is also gaining speed mainly in Western European countries and Russia. In Bulgaria, the education in CAM and integrative medicine is "partial, often commercialized and not institutionalized."
- We can add the author's expertise in this field to the rationale.

In tracing the processes, it is found that what has been achieved is a result of decades of efforts, heated discussions about the content and scope of integrative medicine training, and the identified competencies vary according to the national context. So the educational model proposed by the candidate can be considered as a first step to achieve key and functional professional competencies in the Bulgarian conditions.

The program content of the proposed structural model, detailed and justified in Appendix 5 by the author and illustrated in Figure 37, includes four groups of features: 1. "Principles and characteristics"; 2. "Building elements" - conventional medicine, CAM, scientific methods (modern epidemiology); health promotion; 3. "Levels of education" – university (undergraduate and postgraduate), specialization, certification, lifelong learning. 4. "Specialties" - adaptation to the audience and its level of knowledge and competence.

An integrative medicine competency profile was created, consisting of two main parts - key/general and functional/profession-related competencies, with which students and primary care medical professionals would achieve more complete professional and personal fulfillment (presented in Appendix 5).

The conceptual educational model is universal because it enables it to be applied to different forms and levels of education - as a topic in the programs of various pre-clinical and clinical disciplines, to be distinguished as an independent discipline in basic training, as well as as certified courses within the framework of continuing postgraduate education. Vankova has also developed a taxonomic framework consistent with a number of national strategic documents and those of the EU, according to which any specific program can be developed and gives an example with CAM - one of the elements of integrative medicine (presented in Figure 38).

The conclusions of the dissertation reflect the results of the research in a synthesized form, giving an answer to all the predefined objectives. The five conclusions are extremely well motivated and contain the author's main ideas, supported by the research. The presented results and discussion have sufficient evidentiary value in relation to the previously established hypotheses.

Valuable up-to-date and reasoned recommendations, formed on the basis of the results of the dissertation work, are aimed at: the national health and education policy; development of science in the field of integrative medicine; educational institutions.

The submitted **Statement of Contributions** objectively reflects the real achievements of the author in fulfillment of the set aim and objectives. The dissertation contains a number of **important original theoretical and applied contributions**, among which I would highlight: the creation of a Holistic conceptual model as a step in the study and application of integrative medicine; Universal educational model for integrative medicine and CAM, allowing specific adaptation; Profile of Competences in Integrative Medicine; A taxonomic framework for the development of specific programs; the created Terminological reference book on integrative medicine in support of scientific and educational projects. An important contribution is the formulation of an advanced and expanded definition of integrative medicine, which is an urgent necessity for modern health care and will help to clarify terminology and achieve unity in the perception of the concept in Bulgaria, as well as to include "health promotion" in the possible approaches in favor of health and integrative health care.

The application of the integrative sequential mixed-method design; the first study of educational needs in the field of integrative medicine through the study of knowledge, attitudes and practices (KAP study), serving both to assess the real situation and for continuous monitoring, and the provided Delphi study model have an important scientific, practical and methodological contribution.

The short dissertation relevantly reproduces the content of the dissertation. It is prepared in a volume of 97 pages and is composed of parts that present the most essential results, conclusions, recommendations and contributions of the dissertation work, as well as the publications related to it.

In relation with the dissertation work, Assoc. prof. Vankova presented the required **10 publications and 5 participations** in scientific and educational forums related to the topic, 4 of which were international abroad. The articles were published in the journals "Social Medicine", "Asclepius", "Varna Medical Forum", "Notices of the Union of Scientists", EDULEARN2021 Proceedings, "Scripta Scientifica Salutis Publicae". In 6 of the publications, Vankova is the only one or first author. I believe that these publications and participations, reflecting various stages of the realization of the research aim, contribute to popularizing the achievements of the doctoral student among the scientific community at home and abroad.

CONCLUSION

The dissertation work of Assoc. prof. Desislava Vankova presents the first in-depth study in the field of integrative medicine in Bulgaria.

The solid basic training of Assoc. Assoc. Desislava Vankova, the post-graduate specializations, her personal scientific interest in health promotion, CAM and IM, her intellectual potential, mastery of research methodology, as well as the entire dissertation provide sufficient indisputable evidence for her personal involvement in the conducted dissertation research and for the personal merit of the candidate in the development of the methodology, for the results obtained and the formulated contributions. A strong impression is made by the categorical personal position for "Integrative medicine" not as an alternative, different from the conventional one, but as complementary and

enriching to modern healthcare; the research neutrality of the author and at the same time the strongly expressed support for the need for scientific-based knowledge and education in the field, as well as the inclusion of the innovative idea - "health promotion" in the concept of integrative medicine. According to data from **the Academic Reference** prepared by the Medical University of Varna Library, regarding the publications, citations and scientific profiles, Assoc. prof. Desislava Vankova, with a total number of points of 418.75, covers the Scientometric indicators presented for obtaining the **Doctor of Science degree** in the field 7. Health and sports.

With its modern, original and significant research problem, the applied precise innovative methodology, accurate implementation, derived results, conclusions and proposals, with its valuable theoretical, applied and methodical contributions, the dissertation fully meets the requirements laid down in Art. 86 (2) of The Rule for the Development of the academic staff of Medical University of Varna.

In view of the above, I confidently **give my entirely positive assessment of the dissertation, the short dissertation, achieved results and contributions, and recommend to the respected scientific jury to award the scientific degree "Doctor of Sciences" to Assoc. Prof. Dr. Desislava Ivanova Vankova in the scientific specialty "Social Medicine and organization of healthcare and pharmacy".**

01.08.2022

Varna

Review author:

Prof. Dr Dr. Stoyanka Tsvyatкова Zheleva-Popova, PhD