

## REVIEW

concerning a competition procedure for obtaining the academic position of **ASSOCIATE PROFESSOR** in Field of Study in Higher Education 7. Healthcare and Sports, professional field 7.1. Medicine, scientific specialty **HYGIENE**, announced for the needs of Sofia University "St. Kliment Ohridski", Faculty of Medicine, Department of Neurology, Psychiatry, Physiotherapy and Rehabilitation, Preventive Medicine and Public Health (State Gazette issue 61/02.08.2022), r.), with only one candidate participating – **Chief Assistant Professor, Dr. Rositsa Bozhidarova Popova, MD, PhD**

**Reviewer: PROF. TANYA CHRISTOVA TARNOVSKA, MD, PhD, DMSc**  
Scientific specialties: "*Communal hygiene*" and "*General hygiene*"  
Institution: *MU – Plovdiv*

**I. Overview of the procedure.** The set of documents submitted by the candidate complies with the requirements of the currently in force Law on the Academic Staff Development in Republic of Bulgaria, the Regulations governing the application of the above-mentioned law and the Rules of Procedure for the development of the academic staff at SU "St. Kliment Ohridski". All materials (*personal*: Curriculum Vitae, diplomas, lists of scientific works/production with attached publications and other documentary evidence, own report on scientific contributions, Annexes 3 and 4 related to the implementation of the national minimum requirements, etc.; *references issued by the Faculty of Medicine at Sofia University*: regarding academic workload and programs, a certificate of participation in scientific projects, as well as by *other institutions*: a Conviction Status Certificate, a reference on citations, numerous attestations and certificates, etc.) were provided to me in due time, in their full volume.

**II. Analysis of the candidate's career profile.** **Dr. Rositsa Bozhidarova Popova, MD** was born in Burgas, where she finished her secondary education at the English Language High School "Geo Milev" and continued her studies at the Medical University – Sofia. After graduation (2002), she worked consistently as a general practitioner in the town of Stip, North Macedonia (until 2007), as a doctor developing dietary plans for patients with various diseases for Diet Centers Group (until 2010), as medical sales representative in infant milk formulas for AXXON Bulgaria JSC – MILUPA (until 2012)

and as a nutritionist at "Fit&Full" (until 2013) in Sofia. Meanwhile, she upgraded her professional knowledge and skills acquiring a specialty in Nutrition and Dietetics (2012). Regarding her continuing professional development, Dr. Popova, PhD has presented documents attesting her participation in numerous specialized courses in Bulgaria and abroad: "Modern metabolic diseases – diagnostics, treatment and prevention" and "Current problems in diet therapy" (2008, MU – Sofia), LLL (The Life-Long Learning ) course (2008 – Sofia), organized by ESPEN (European Society for Enteral, Parenteral Nutrition and Metabolism), Basic Educational Course in Clinical Nutrition (2008, ESPEN, Hradec Králové, Czech Republic), Clinical Nutrition Course (2008, Brionian Islands, Croatia), ESPEN, LLL-course (2008, Florence, Italy), advanced course in Clinical Nutrition (2009, ESPEN, Maastricht, Netherlands), TTT (Teach the Teachers) – teacher training course within the framework of an international LLL-course (2009, ESPEN, Nice, France), LLL-course within the Jubilee International Conference on Clinical Nutrition (2010, Sunny beach), European Nutrition Leadership Course (ENLP) – 2012, Luxembourg.

Dr. Popova, PhD began her academic career in 2013 when she was appointed an Assistant Professor at University Hospital "Lozenetz" – Faculty of Medicine at SU "St. Kliment Ohridski", where she conducted seminars and practical exercises in "Hygiene and Ecology" with medical students in Bulgarian and English. The scope of her scientific interests covers: food safety, nutritional needs of the population, assessment of nutritional status, nutrition in different diseases, intervention programs in the field of nutrition and nutritional epidemiology, etc. The research efforts of Dr. Popova, PhD focused on her doctoral studies. She carried out her work on the doctorate at the UMBAL "Tsaritsa Yoana ISUL" and in 2014 successfully defended her dissertation on the topic: "Malnutrition – modern diagnostic and therapeutic approaches". At the same time, Dr. Popova, PhD continued her scientific work in some fields, whereas regarding others she expanded and deepened it owing to her high level of qualification, research experience gained, excellent language preparation, as well as her good communication skills and teamwork ability.

### **III. Assessment of the candidate's scientific works**

**1. Quantitative characteristics of scientific production.** The entire scientific work of Dr. Popova, PhD comprises 79 works, incl. Monographic work, chapters in textbooks and manuals, full-text publications in Bulgarian and foreign academic journals and participation in national and international scientific forums. **Considering her participation in this competition** Ch. Assistant Professor Dr. Popova, PhD has presented 1 monograph, 7 publications in periodicals, 5 of which are referenced in world-renowned databases, 7 publications in scientific-thematic collections, 40 summaries resulting from participation in national and international scientific forums, 5 of which have been published in international journals. In 9 of the 15 full-text works, Dr. Popova is the first or sole author (60%), indicating that the candidate herself has created the scientific production. The

materials are accurately presented and clearly arranged – a prerequisite for rapid evidence orientation and simplified analysis and interpretation in essence. Their distribution by type, number and volume is presented in Table 1:

**Table 1.**  
**Scientific works of Ch. Assistant Professor Dr. Popova, PhD in terms of qualitative and quantitative characteristics, submitted in the competition for obtaining the academic position "Associate Professor"**

No.	Type of publication	Authorship				Numbering (№, № ...)	Publications in a foreign language	Total	
		Sole or 1 <sup>st</sup> author		2 <sup>nd</sup> and subsequent author			English (№, №..)	Publications number	Pages number
		number	ctp.	number	number pages				
1	Monographs	1	150	-	-	i.1	-	1	150
2	Scientific full-text publications	8	41	6	33	III.1 – III.7 IV.1 – IV.7	III.1; III.2; III.3; III.4; III.5	14	74
3	Reports presented at scientific forums, provided with summaries	31	43	9	16	VI.1 – VI.40	VI.3; VI.4; VI.5; VI.11; VI.14; VI.17; VI.18; VI.23; VI.26; VI.34	40	59
4	Total	40	234	15	49	-	-	55	283

**2. Thematic distribution and analysis.** The scientific production of Ch. Assistant Professor Dr. Popova, PhD, submitted for participation in this competition can be summarized in the following thematic fields:

- ✦ *Analysis of nutritional status in patients with chronic malnutrition stemming from different causes. Application of new methods for detailed assessment of their nutritional status* (scientific publications I.1, II.3, III.2 and scientific messages №№ IV.3, IV.6, IV.18, IV.20, IV.21, IV.26, IV.29, IV.30, IV.31, IV.32, IV.36, IV.37). Additionally, an indirect calorimetry measurement to study basal metabolism, echocardiography and osteodensitometry have been performed (IV.30, IV.32, IV.36, IV.37).
- ✦ *Optimizing diet therapy in patients with chronic malnutrition stemming from different causes in short- and long-term aspects. Development of a behavioral algorithm for hospitalized and outpatients with chronic malnutrition.* (III.5, III.7, IV.1, IV.15, IV.16, IV.22, IV.23, IV.24, IV.25, IV.33, IV.34, IV.35, IV.40)
- ✦ *Alternative diets – positive and negative aspects; their impact on public health* (II.2, II.5, II.7, III.4, IV.5, IV.8, IV.14, IV.28, IV.39).

- ✦ *Urgent hygiene problems related to nutrition of the population. Imbalance in the human body. Analysis of the consequences of unbalanced nutrition. Benefits and damages resulting from the intake of certain nutrients. (II.4, II.6, III.1, IV.10, IV.19, IV.27, IV.34, IV.35, IV.38)*
- ✦ *Problems with the provision of food and catering services in hospital facilities (II.1, IV.13, IV.17, V.1)*
- ✦ *Health status of office workers, identification of stressogenic factors among medical students – risks in work- and study environment, preventive measures. (III.3, III.6, IV.9, IV.11, IV.12)*

**3. Assessment of the monographic work.** The monograph "Malnutrition and depression in eating disorders" is 150-page work, of which the References Cited section is described on 15 pages and contains 231 sources (136 were published in the last 10 years; 10 in Cyrillic alphabet; 10 in Latin alphabet – 221). The thorough study of the references draws attention of the author to the urgent and significant problem of malnutrition with a variety of etiology, incl. influence of various stressogenic factors in modern society. The monograph is well structured and includes a summary in Bulgarian and English, a theoretical part with an introduction encouraging awareness of the significance of the problem; the biochemical and hormonal characteristics of the *eating* process and its disorders are described, the parameters and clinical symptoms of malnutrition are defined, a group of diseases leading to malnutrition is analyzed – anorexia nervosa, bulimia, orthorexia nervosa and other ED (eating disorders), up-to-date tests for the early detection of behavioral eating disorders are presented, an assessment of eating disorders related to healthy eating recommendations is done, the importance of genetic factors and hormonal disorders regarding the occurrence of ED is emphasized, the possible medical complications and the relevant biochemical tests for their establishment are described in detail; with a special focus on the crucial changes in the central nervous system and their relationship to depression in eating disorders. This is followed by a "Special Part", in which the author presents the results of her own researches. Through an in-depth references analysis and based on her own scientific research and practical experience, she addresses the problem of eating disorders in a multifaceted and comprehensive way, specifies the algorithm for researching the nutritional status of patients with ED, discusses the issue of applying questionnaire methods for assessment of nutrition in patients with ED, describes the most commonly applied anthropometric and biochemical (biomarkers) methods for assessing the degree of malnutrition in clinical settings, as well as diagnostic methods for establishing the severity of depression; the results of Beck's test (appropriately appended at the end of the monograph) in patients with ED allow her to comment on their relationship to the degree of malnutrition. In the last part, "Conclusion", the main directions and perspectives for future research are presented. On a few pages at the end of the book, a review with a pronounced positive character, written by a leading specialist in the field of nutrition from our country, is published. Taking into account the growing trend of spread of ED, incl.

depressive conditions in our country and in the world, as well as the fact that they predominantly affect young people and lead to severe psychosocial consequences, I believe that the monograph is extremely timely and of high scientific and applied value.

**4. Assessment of submitted publications.** Apart from the main research work, Dr. Popova, PhD also presents the full-text publications described in II and III.

✦ *Optimizing diet therapy in patients with chronic malnutrition stemming from different causes in short- and long-term aspects. Development of a behavioral algorithm for hospitalized and outpatients with chronic malnutrition* (III.5, III.7, IV.1, IV.15, IV.16, IV.22, IV.23, IV.24, IV.25, IV.33, IV.34, IV.35, IV.40). For the first time in Bulgaria, a complex study of the metabolic, nutritional and functional status of 92 malnourished patients with primary anorexia nervosa and bulimia, secondary anorexia with anxiety-depressive syndrome and patients with gastrointestinal diseases and/or surgical interventions of the gastrointestinal tract, and their nutritional risk has been determined. A complex of methods has been used, including a study of nutrition applying questionnaire methods, assessment of nutritional status through anthropometric methods, through functional studies, through assessment of cognitive functions with the MMSE test and with hematological, biochemical and hormonal indicators (biomarkers) in blood and urine. Significant differences in nutritional status between chronically malnourished patients and healthy subjects, as well as between chronically malnourished patients of different etiologies, have been clarified, which has made it possible priority investigations for each group to be determined with the objective of establishing nutritional risk more quickly and precisely so that an adequate and timely diet therapy has been identified. A modern complex diagnostic-therapeutic approach for systemic and long-term prevention and therapy of chronic malnutrition in medical practice has been created and tested, which includes an individual hygienic-dietary regime, supplementation per os, partial parenteral nutrition or total parenteral nutrition. The nutritional status of patients after hematopoietic stem cell transplantation has been assessed and nutritional support as a supplement to the diet therapy based on the above diagnostic-therapeutic approach has been proposed. (III.5, IV.15).

✦ *Alternative diets – positive and negative aspects; their impact on public health* (II.2, II.5, II.7, III.4, IV.5, IV.8, IV.14, IV.28, IV.39). Resulting from the increased incidence of metabolic disorders among the population in the last few decades, a growing trend of spreading various alternative diets with the aim of improving human health, preventing and even curing some diseases has been evidenced. In this regard, a detailed analysis of the most common alternative diets such as vegetarianism, veganism, intermittent feeding, raw foodism has been done. The negative consequences of applying these diets in the short and long term have been highlighted, and the pathobiochemical and pathophysiological changes occurring in the body have been described in detail.

✦ *Urgent hygiene problems related to nutrition of the population. Imbalance in the human body. Analysis of the consequences of unbalanced nutrition. Benefits and damages resulting from the intake of certain nutrients* (II.4, II.6, III.1, IV.10, IV.19,

IV.27, IV.34, IV.35, IV.38). The articles demonstrate in-depth analysis indicating under- or over-nutrition. Article II.4 shows that overweight and obesity are also found to result in deficiencies in certain nutrients, especially micronutrients such as *zinc*, *iron*, vitamin A, etc. Article II.6 describes in detail all the benefits and damages resulting from fatty acids in the human body, with recommendations for their daily consumption and the beneficial effect of omega-3 polyunsaturated fatty acids supplementation in the elderly people. Article III.1 presents results from an own study that has analyzed the relationship of vitamin D deficiency with anthropometric parameters and has found a strong relationship between subnormal vitamin D levels and sarcopenic obesity.

✚ *Problems with the provision of food and catering services in hospital facilities (II.1, IV.13, IV.17, V.1)*. Statistics has revealed that between 15 and 60% of hospitalized patients are malnourished, resulting from reasons of a different nature, however, the complications and fatal outcome in patients with hospital malnutrition are many times more frequent than those with reference anthropometric indicators. This necessitates regular surveys (both independent and within the framework of the European project Nutrition Day) on patient satisfaction with hospital food and nutritional risk assessment.

✚ *Health status of office workers – the workplace environment risks, preventive measures (III.3, III.6, IV.9, IV.11, IV.12)*.

With the large-scale introduction of new technologies, the increase in education among the population and the decrease in physical activity, a raised share of office workers compared to workers in other industries has been observed. A study with the participation of Dr. Popova, PhD, has proved the presence or prodromal signs of metabolic syndrome among office workers, increasing the risk of socially significant diseases and death.

✚ *Study on stress among medical students*

The high number and large volume of studied subjects and exams among medical students, working in a hospital environment, meeting severe pathology and patients in a terminal condition, financial difficulties, the search for additional work during studies, etc. lead to stress reactions. The level of stress increases gradually during studies and results in depression, low self-esteem, mental and metabolic disorders. This is confirmed by a study conducted with the participation of Dr. Popova, PhD, among the medical students at the University of St. Kl. Ohridski". (III.3).

The submitted scientific publications are well designed and illustrated. The goals and objectives are clearly and strictly stated. The research methods used are relevant and advanced. The statistical processing applied to scientific works is diverse, but targeted and appropriate. The results are well presented and sufficiently motivated. The conclusions logically follow the obtained results and analysis.

I must also say that Dr. Popova, PhD, has presented the results obtained from her research at various scientific forums in 32 in our country and 8 abroad), evidenced by

certificates. The summaries of five of the reports have been published in international journals. The candidate's participation as a guest speaker in the international webinar on the topic: "Methodology and practice in the development and application of recommendations for healthy nutrition of population" is prestigious recognition.

**5. Contributions.** I accept the detailed *Author's reference of the scientific contributions* presented by the candidate. To summarise, I would like to draw special attention to some contributions of a theoretical-cognitive and applicable nature:

- ✦ An innovative approach is the inclusion of **the calculation of the upper arm muscle area** correlating with the muscle strength, the application of **echocardiographic imaging**, determining the degree of cardiac ventricular dysfunction, which in turn corresponds to the total muscle strength, as well as the **MMSE test** for the analysis of cognitive functions in the assessment of nutritional status in patients with chronic malnutrition.
- ✦ It has been revealed that the severity of malnutrition resulting from anorexia nervosa, bulimia, and onset of depression correlates with the severity of depression, which is a determinant of disease evolution.
- ✦ The created and tested complex diagnostic-therapeutic approach for systemic and long-term prevention and therapy of chronic malnutrition, including an individual diet, supplementation per os, partial parenteral nutrition or total parenteral nutrition, is also innovative. This algorithm makes it easier for clinicians to follow up short-term and long-term deficits and address them accordingly with relevant supplementation. The same applies to patients who have inability to take in the amount of food providing their energy balance.
- ✦ A detailed and in-depth analysis of individual diets claiming to have treatment potential regarding autoimmune and neurological diseases (epilepsy, multiple sclerosis, Hashimoto's thyroiditis, etc.) has been conducted. A weak correlation between diets and disease evolution has been established; moreover, the elimination of certain food groups labeled as "harmful" can result in severe deficiency states related to some micronutrients, such as B vitamins, *iron*, *zinc*, etc., with subsequent worsening of the underlying disease.
- ✦ The pandemic associated with overweight and obesity prompts the emergence of new imbalanced diets for the reduction of body mass with questionable success, short-term effects and even organ damages. Such diets are the high-protein diet, the ketogenic diet, etc. Misinformation among the population about the guaranteed success of these diets leads to their mass application and plays a key role for the deterioration of public health.
- ✦ The preventive measures proposed to improve the health status of office workers, as well as the results from the study on stress among students, pointing to the development of individual strategies to overcome it through sports, healthy eating, regular sleep and maintaining positive relationships within community, have a contributory character with important practical implication.

**5. Reflection (citation) of the candidate's publications in the national and foreign literature (publication image).** The reference of the Central Medical Library, attached to the documents, certifies that at the time of their submission for participation in the competition, Dr. Popova, PhD has registered 38 citations in Bulgarian publications and 1 citation abroad, as the total IF of the citing journals is 8.57. This illustrates that the works of Ch. Assistant Professor Dr. Popova, PhD are known in specialized circles.

**6. Participation in project implementation.** In 2017, Ch. Assistant Professor Dr. Popova, PhD participated in the Nutrition Day international project (DVR-Nr.0688967, with the support of the Medical University – Vienna and the Austrian Society of Clinical Nutrition). The Nutrition Day project is a global initiative to combat malnutrition in hospitals, with a total of 71 countries and over 8,000 hospitals participating from the beginning (2005) until 2022. In general, its aim is to raise awareness about malnutrition, to overcome the differences between various hospitals all over the world, to compare the results of individual hospitals with reference centers applying good clinical practices. The survey is transversal and is carried out on a predetermined day each year at the same time by all hospitals registered in the project.

**7. Scientific Reputation.** To her documents for participation in the competition, the candidate has attached a certificate of membership in the Governing Board of the *Bulgarian Scientific Society of Nutrition and Dietetics* responsible for "Communication of the society with the international nutrition associations FENS and IUNS" (*Federation of European Nutrition Societies and International Union of Nutrition Societies*). A letter by FENS President Prof. Philip Calder has been also attached, assuring that Dr. Popova, PhD is a regular member of the Federation's Board. Obviously Ch. Assistant Professor Dr. Popova enjoys a good scientific reputation.

**IV. Assessment of teaching activity.** According to the reference issued by the the Medicine Faculty at SU "St. Kliment Ohridski" for educational workload, it appears that Ch. Associate Professor Popova, PhD teaches Hygiene and Ecology to *medical* students and interns in Bulgarian and English, and her average annual **general** workload for the last five academic years (2017/2018-2021/2022) has been **850.7** hours within the ranging 1010.7 hours and 675.9 hours, whereas her average annual **academic hours** are respectively **690.3** hours ranging between 802.5 hours and 504 hours. At the same time, Dr. Popova, PhD, has participated in preparing and updating summaries and tests in the department, in committees conducting Entrance Exams in Biology, etc.

Further, I must add the impressive popular scientific and scientific-applicable activity of Dr. Popova, PhD: numerous publications in the "Strength for life" section of the daily newspaper 24 Chasa and other mass media; participation in forums for healthy eating of different population groups; educational campaigns among the population and general practitioners on healthy and dietary nutrition; prevention and lifestyle campaigns for some chronic diseases; she has published a *Handbook with Dietary Recommendations for Cardiovascular Diseases*, intended as a guide for patients, general practitioners and



cardiologists. For the past 15 years, Dr. Popova, MD has worked as a consultant at several diet centers and diet kitchens.

**V. Critical notes and recommendations.** I have no significant critical notes on the monographic work and the submitted publications, however, I believe that Dr. Popova, MD has gained sufficient scientific and practical experience, on the basis of which I recommend that she turns her publication activity to journals with IF. Furthermore, I think that due to her professional experience she could also provide an invaluable contribution as a member of editorial boards (such boards have not been specified in the competition documents).

**VI. General assessment of the candidate's compliance with the mandatory conditions, quantitative criteria and scientometric indicators.** The evidence of fulfillment of the minimum national requirements and the requirements of the Regulations for the terms and conditions for acquiring scientific degrees and holding academic positions at the Sofia University "St.Kl.Ohridski", Faculty of Medicine and Annexes 3 and 4 related to the implementation of the national minimum requirements Annexes 3 and 4 for occupying the academic position ASSOCIATE PROFESSOR in the field of higher education 7. "Healthcare and sports, by professional field 7.1. Medicine and scientific specialty "Hygiene" have been correctly presented in tabular form in the set of documents: indicator A (A) – 50 points, if required 50 points; indicator B (B) – 100 points, if required 100 points and indicator C (Г) – 302.5 points, if required 200 points. These data show that *the scientometric data for the overall academic development of Ch. Assistant Professor D-r Rositsa Popova, PhD, meet the normative cumulative requirements for publication activity.*

**VII. CONCLUSION:** The findings related to the research, publication, teaching and practical activities of Ch. Assistant Professor Rositsa Popova, PhD and the performance of the administrative commitments mentioned in the review, clearly demonstrate compliance with the requirements of the Law on the Academic Staff Development in Republic of Bulgaria for occupying the academic position ASSOCIATE PROFESSOR. On this ground I express my unambiguous positive attitude towards this procedure and suggest to the respected members of the Scientific Jury to announce support for the candidacy of Ch. Assistant Professor D-r Rositsa Popova, PhD to occupy the academic position of ASSOCIATE PROFESSOR in the field of higher education 7. "Healthcare and sports, by professional field 7.1. Medicine and scientific specialty "Hygiene").

Reviewer: 

(Prof. T. Tarnovska, MD, PhD, DMSc)