

# *Scientific Satellite Symposium*

*Euro Global Summit & Medicare Expo on Weight Loss*

**Advanced perspectives for better fitness  
in public health nutrition to reduce  
obesity and related chronic diseases**

**26 – 27 June, 2015**

**Hotel "Premier", Bitola, Republic of Macedonia**



**Organized by the University of Bitola St. Kliment Ohridski  
Faculty of Technology and Technical Sciences Veles**

**Symposium Proceedings**



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# Welcome Message

*Dear Colleagues and friends,*

*Scientific investigations and various scientifically based recommendations in the application of Medical Nutrition Therapy (MNT) for obese individuals, including lifestyle interventions and improvement of cardiorespiratory fitness by increased physical activity, shows high degree of efficiency in reducing obesity and health risks: metabolic disorders (type 2 diabetes, hyperlipidemia), cardiovascular diseases, muscle and skeletal disorders and other frequent co-morbidities linked to obesity*

*The correlation between high level of sedentary lifestyle, bad nutritional practices and negative effects of both on the health, especially in the adult population, are not evaluated so far. The innovative approaches towards this 21 century epidemics become imperative.*

*To organize a Nutritional Symposium for application of MNT to fight obesity, focusing on prevention aspects through physical activity, sport and behavioral medicine is not an easy task due to lack of scientific and expert staff, research and articles devoted to the subject.*

*Despite those facts, the innovative approaches in overcoming the health risks linked to obesity which are in the domain of the nutrition science, innovative nutritional technologies, fitness, physical activity and health, are subject to numerous research efforts as well as controversies throughout the world.*

*Publishing linked to specialized subjects in nutrition, sport and behavioral medicine, obesity and public health is minimal. Hence, this Symposium represents a rare occasion for educating the professional and scientific public and is as such included in the continuous education efforts of the Macedonian Medical Society. Simultaneously, the Symposium is the only venue where in addition to the scientific cadre, younger students can publish their research and exchange experiences with best European experts in the field.*

*The Symposium provides an ideal academic platform for the scientific and academic nutritional cadre as well as other experts in the region to present the latest scientific news related to the overcoming of the health risks linked to obesity.*

*Conducting the scientific Symposium will produce numerous positive effects for the newly established Faculty of Technology and Technical Sciences in Veles as part of the St. Clemet of Ohrid University in Bitola and the newly established Study Program in Nutrition as the first and only study program of this sort in Macedonia.*

*Due to the fact that this Symposium is as a scientific event included in the "Euro Global Summit & Medicare Expo on Weight loss 2015", to be conducted August 18-20, 2015 in Frankfurt Germany, <http://weightloss.global-summit.com/europe>, we believe that the promotion of the Faculty will be one of the key benefits achieved.*

*The Symposium is also included in the activities of The World Obesity Federation (WOF) in the segment of official educational programs on obesity. WOF is a network organization representing professional, scientific and academic cadre and research communities from more than 50 regional and national associations dealing with obesity worldwide. <http://www.worldobesity.org/what-we-do/events/non-iaso-events/>*

*Exposing our academic cadre, through the abstracts and biographical information that will be included on the web site of these European and global networks will create opportunities for collaboration in the international scientific research efforts and will increase the profile of the Faculty to potentially bid for organizing the next*

European and Global Summit in 2016. At the same time it will contribute to the affirmation of the Republic of Macedonia by presenting our ambitious plans in the development of the nutrition as a multidisciplinary science. The Macedonian Medical Society and the National Organization for the Promotion of Health-Enhancing Physical Activity (HEPA-Macedonia), a member of the World Health Organization (WHO HEPA Europe), will be co-organizers of this event.

The thematic areas of the Symposium are:

*Mapping of recommendations for managing obesity in Europe and worldwide, and comparing of efficiency in an effort to improve their quality as well as evidence based MNT in children, adults and pregnant women.*

*Comparison of applied scientifically based recommendations for dosing regular physical activity in prevention and treatment of obesity, maintaining healthy body weight, reducing of risk factors for NCD, reducing overall mortality and achieving long term health benefits.*

*Research in the domain of the cardiorespiratory fitness (VO<sub>2</sub>max) and physical activity in children, adolescents and adults in Macedonia.*

*Healthier food choices and appropriate nutrition for preventing obesity in various healthy population categories.*

*Macro and micro composition of different reduction diets and combined treatments.*

*Healthy diet through education and food reformulation - targets for food manufacturing industry (salt, saturated fat, trans fat and sugar content).*

*Monitoring and promotion of health-enhancing physical activity and nutrient-rich fresh food intake in reducing the rising trend of obesity prevalence in children and adolescents.*

*Regarding to the Position Paper on the Role of the Dietitian in the Management of Obesity (EFAD, 2008), Nutritionists/Dietitians play a key role in the management of obesity in adults and children at every level. They are uniquely qualified to translate the scientific evidence on energy intake and expenditure, nutrition and behaviour into practical dietary advice and the provision of healthy food. Nutritionists/Dietitians use counselling techniques to support individuals and groups who are overweight or obese or have obesity related conditions, such as diabetes and coronary heart disease, in an effective way both short term and long term (Lichtenstein 2007, Zazpe 2008, Govers 2009, Delahanty 2010).*

*Nutritionists/Dietitians are in a key position to promote a healthy lifestyle. They are educated in nutrition, health, counselling and behavioural strategies and are actively involved in public health, health promotion/prevention, clinical treatment, disease management, research, food planning and preparation.*

*Nutritionists/Dietitians have the skills and competences to interpret and communicate theoretical knowledge to enable individuals to make appropriate choices about food and healthy lifestyle and to teach people how to sustain healthy behaviour.*

*Nutritionists/Dietitians fulfil their role in prevention, treatment, food provision and research in a range of different settings:*

*Healthcare (primary care, acute, residential and private practice);*

*Education (pre-school, school and higher education institutions);*

*Workplace;*

*Food industry;*

*Multi-media;*

*Research institute;*

*National and local governments*

**Vera Simovska-Jarevska, MD., PhD.**

*Univ. Prof. D-r / Director of Postgraduate study*

*University St. Kliment Ohridski-Bitola*

*Faculty of Technology and Technical Sciences Veles*

*Macedonia*



# Letter of Gratitude

**From Professor D-r Pekka Puska,  
MD, M.Pol.Sc. PhD**

*I want to congratulate you for your good activities and I wish you all success.*

*Well-being through nutrition and exercise, the national obesity program in Finland, (2012-2015) is successful, and good example for Obesity prevention into their decision making and action.*

*The State Council's Resolution of health-enhancing physical activity (HEPA) and nutrition on development guidelines covers the various age groups of nutrition and physical activity recommendations, including the elderly.*

*One of the target group is a high-risk population refers to adults, with obesity-related diseases, such as diabetes, or risk factors for NCDs.*

## Biography

*Professor D-r Pekka Puska is President of International Association of National Public Health Institutes (IANPHI).*

*He was Director General of National Institute for Health and Welfare (THL) in Finland and Director and Principal Investigator of "North Karelia Project": prevention of cardiovascular diseases in North Karelia and later in all Finland. Within 25 years, over 80% decline in annual heart disease mortality among the working age population and a dramatic general improvement in public health.*

*The North Karelian and Finnish experience has greatly influenced nutrition policy and behaviour the world over and has been responsible for major reductions in deaths and chronic ill health from vascular disease. The clear demonstration of the protective value of lowering blood cholesterol has also opened the way for powerful new medications to reinforce the effect of dietary modification.*

*Professor Puska was Director of Department for Non-communicable Disease Prevention and Health Promotion of World Health Organisation (WHO) and the focal point of this work that culminated in adoption of the "Global Strategy on Diet, Physical Activity and Health" by the World Health Assembly in 2004.*

*Also, he was President of World Heart Federation (WHF).*

*Professor Puska is Doctor of Medicine and Surgery, epidemiology/public health, and Professor of Public Health, University of Koupio. He has over 500 scientific publications.*

*Professor Puska has served as a Member of the National Parliament of Finland.*



# *Welcome Message*

*Dear Symposium Participants,*

*I am pleased to welcome all of you to the Satellite Symposium for Euro Weight loss 2015, “Advanced perspectives for better fitness in public health nutrition to reduce obesity and related chronic diseases”. I would like to extend a special welcome to our students especially as it is the first time for some of them to participated at scientific meeting.*

*Through this satellite symposium, we would like to engage with all of you in an open and constructive dialogue about obesity, one of the most prevalent health concerns among all populations and age groups worldwide, resulting into a significant increase in mortality and morbidity related to coronary heart diseases, diabetes type 2, metabolic syndrome, stroke and cancers. Prevention and treatment of this problem are an important deal for health systems, whose aim is to reduce the obesity and overweight prevalence, and related complications over the world.*

*At this Satellite Symposium exchange your knowledge in the arena of nutrition and food technology and enjoy the beauties of Bitola – City of the consuls”.*

*It is my sincere hope that we shall be seeing more of you in the future at another Symposium.*

***Valentina Pavlova, PhD***

*Associate Professor / Dean  
University St. Kliment Ohridski-Bitola  
Faculty of Technology and Technical Sciences Veles  
Macedonia*



# *Welcome Message*

*Dear Colleagues,*

*This scientific Symposium will deal with the global epidemic of obesity in adults, adolescents and children along with its complications of type 2 diabetes, hypertension and heart disease. The main topics are food, dietary, exercise and lifestyle modifications to encourage weight loss and the concept of Wellness.*

*Examples include a healthy lifestyle, weight management, physical fitness as well as food products reformulation. Selected examples of general wellness claims include claims to promote or maintain a healthy weight, encourage healthy eating or assist with weight loss goal and claims to promote physical fitness, measure aerobic fitness, improve physical fitness, develop or improve endurance or improve energy.*

*Many presentations in this Symposium fall into examples of a healthy lifestyle associated with risk reduction and are very useful for public dissemination.*

***Dragan Damjanovski, PhD***

*Professor / The First Dean  
Faculty of Technology and Technical Sciences Veles  
University St. Kliment Ohridski-Bitola  
Macedonia*

# *International Advisory Board*

## **President, Vera Simovska-Jarevska**

Director of Postgraduate Study for Nutrition, Faculty of Technology and Technical Sciences Veles,  
University of Bitola St."Kliment Ohridski", Macedonia

## **Valentina Pavlova**

Dean of Faculty of Technology and Technical Sciences Veles,  
University of Bitola St."Kliment Ohridski", Macedonia

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President of Student Parliament at the Faculty  
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**Tatjana Kalevska**

**Sasko Martinovski**

**Magdalena Damjanovska**

**Tatjana Blazevska**

**Ana Naseva**

**Elena Stojanovska**

**Miodrag Stojanovic**

**Mila Vidin-Jarevska**

**Sanja Mancheva**

**Slavica Sivevska**

**Veziro Starova**

**Sasko Drvosanski**







Scientific Satellite Symposium for “Euro Global Summit & Medicare Expo on Weight Loss”  
August 18-20, 2015, Frankfurt, Germany

## Advanced perspectives for better fitness in public health nutrition to reduce obesity and related chronic diseases

Hotel “Premier”, June 26-27, 2015 - Bitola

### Scientific Program

June 26, 2015

14.00-18.00 Registration of participants

**18.00 Opening Ceremony**

18.00 - 18.30 Welcoming speeches

**Univ. Prof.d-r. Vera Simovska-Jarevska**, Symposium President  
**Univ. Prof. d-r. Zlatko Zoglev**, Rector and **Univ. Prof. Pere Aslimovski**-  
Prorector of the University of Bitola “St.Kliment Ohridski”, Macedonia  
**Univ. Prof. d-r Valentina Pavlova**, Dean, Faculty of Technology  
and Technical Sciences Veles, University of Bitola St.”Kliment  
Ohridski”, Macedonia

18.30 - 19.00 Introductory speech: **International Obesity Guidelines  
focused on Lifestyle Intervention**

**President Lecture, Vera Simovska-Jarevska**, Director of Postgraduate  
Study for Nutrition, Faculty of Technology and Technical Sciences Veles,  
University of Bitola St.”Kliment Ohridski”, Macedonia

**19.00 – 20:00 Cocktail**

June 27, 2015

#### Plenary lectures

<b>Session Chairs</b>	<b>Valentina Pavlova, Dragan Damjanovski, Vesna Antoska-Knights</b> University of Bitola St.”Kliment Ohridski”, Faculty of Technology and Technical Sciences Veles, Macedonia
<b>09:30 - 09:50</b>	Effects of high-intensity lifestyle intervention on increased cardiometabolic risk in truncal obese adults <b>Vera Simovska-Jarevska</b> University of Bitola St.”Kliment Ohridski”, Faculty of Technology and Technical Sciences Veles, Macedonia
<b>09:50 - 10:10</b>	Hot debates in nutrition and food production/reformulation against global obesity <b>Daniela Nikolovska-Nedelkoska</b> University of Bitola St.”Kliment Ohridski”, Faculty of Technology and Technical Sciences Veles, Macedonia

<b>10:10 - 10:20</b>	<b>Discussion</b>
<b>Session 1</b>	<b>Food, Nutrition and Public Health</b>
<b>Track 1</b>	<b>Screening Obesity and Optimisation in Nutrition</b>
<b>Session Chairs</b>	<b>Zora Uzunoska, Tatjana Kalevska, Sasko Martinovski</b> University of Bitola St."Kliment Ohridski", Faculty of Technology and Technical Sciences Veles, Macedonia
<b>10:20 - 10:30</b>	Mathematical modeling and optimisation in nutrition <b>Vesna Antoska-Knights, Vera Simovska-Jarevska</b> St."Kliment Ohridski" University of Bitola, Faculty of Technology and Technical Sciences Veles, Macedonia
<b>10:30 - 10:40</b>	Whey properties and its use for production of functional and probiotic drinks <b>Tatjana Kalevska, Dragan Damjanovski, Aleksandar Saveski</b> St."Kliment Ohridski" University of Bitola, Faculty of Technology and Technical Sciences Veles, Macedonia
<b>10:40 - 10:50</b>	Modeling Nutritional Business Models of Consumer Behavior when Buying Food Products <b>Sasko Martinovski, Vera Simovska-Jarevska, Rozita Spirovska-Vaskovska</b> St. Clement of Ohrid, University of Bitola, Faculty of Technology and Technical Sciences Veles.
<b>10:50 - 11:00</b>	Screening childhood obesity in region of Prilep, Macedonia <b>Rosida Jakimoska-Jordanoska. Mentor: Vera Simovska-Jarevska</b> St. Clement of Ohrid, University of Bitola, Master study of Nutrition at the Faculty of Technology and Technical Sciences Veles.
<b>11:00 - 11:10</b>	Identification and determination of Ganodermic acid like bioactive compounds in samples from the medical mashroom reishi (ganoderma lucidum) and weight maintance. <b>Miodrag Stojanovic, Mentor: Dragan Damjanovski</b> St."Kliment Ohridski" University of Bitola, Master Study of Nutrution at the Faculty of Technology and Technical Sciences Veles
<b>11.10 - 11.15</b>	<b>Coffee break</b>
<b>Track 2</b>	<b>Health risks associated with overweight and obesity</b>
<b>Session Chairs</b>	<b>Vera Simovska-Jarevska, Daniela Nikolovska-Nedelkoska, Rosida Jakimoska-Jordanoska</b> University of Bitola St."Kliment Ohridski", Faculty of Technology and Technical Sciences Veles, Macedonia.
<b>11:15 - 11:25</b>	The normal and slowly higher body weight is a protective factor of bone mineral density in premenopausal and Osteoporosis in postmenopausal patients with Rheumatoid Arthritis <b>Zora Uzunoska</b> University of Bitola St. "Kliment Ohridski", Faculty of Technology and Technical Sciences Veles, Macedonia.
<b>11:25 - 11:35</b>	Diagnostic significance of obesity-induced insulin resistance and decreased sensitivity of periferial tissue in prevention of and care for comorbidities <b><sup>1</sup>Mila Vidin-Jarevska, <sup>2</sup>Vera Simovska-Jarevska</b> <sup>1</sup> University of Belgrade, Institute of Rheumatology, Belgrade, Serbia

	<sup>2</sup> University of Bitola St. "Kliment Ohridski", Faculty of Technology and technical sciences Veles, Macedonia
<b>11:35 - 11:45</b>	Obesity as a risk factor for complications during the pregnancy <b>Elena Stojanovska</b> "St. Kliment Ohridski" University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>11:45 - 11:55</b>	DASH-diet in hypertension and obesity prevention <b>Sanja Mancheva</b> St."Kliment Ohridski" University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>11:55 - 12:05</b>	NaCl restriction survey in patients with cardiovascular diseases and heart failure on Primary Health Care level in Macedonia <b>Ivo Zele, Tanja Tefova</b> St."Kliment Ohridski" University of Bitola, Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>12:05 - 12:20</b>	<b>Discussion</b>

<b>12:20 - 13:20</b>	<b>Lunch</b>
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<b>Session 2</b>	<b>Health Promotion and Obesity Prevention and Management through Lifestyle Interventions</b>
<b>Track 1</b>	<b>Nutritional Counselling in Health Promotion</b>
<b>Session Chairs</b>	<b>Sanja Mancheva, Tatjana Blazevska, Elena Stojanovska</b> St."Kliment Ohridski" University of Bitola, Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>13:20 - 13:30</b>	Nutritional Counselling on dietary change during Religious Fasting in Macedonia: Easter and Ramadan <b>Vezire Starova. Mentor: Vera Simovska-Jarevska</b> St."Kliment Ohridski" University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>13:30 - 13:40</b>	Make smart choice – improving cardiovascular health through healthy nutrition and dietary salt restriction <b>Tanja Tefova, Ivo Zele</b> St."Kliment Ohridski" University of Bitola, Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>13:40 - 13:50</b>	Healthy and balanced intestinal micro flora (microbiome) as precondition for maintaining and regulating normal body weight <b>Sasko Drvosanski</b> St."Kliment Ohridski" University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>13:50 - 14:00</b>	Influence of dietary habits on development of caries in children from rural and urban areas of Skopje <b>Slavica Sivevska, Mentor: Vera Simovska-Jarevska</b> St."Kliment Ohridski" University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>14:00 - 14:10</b>	Psychosocial aspects of obesity <b>Maja Vanevska. Mentor: Slavica Shubeska-Stratrova*</b>

	University of Bitola St. „Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia; *Clinic of endocrinology, diabetes and metabolic disorders, Skopje, Macedonia.
<b>Track 2</b>	<b><i>Nutrition Education in Obesity Prevention and Management</i></b>
<b>Session Chairs</b>	<b>Miodrag Stojanovic, Aleksandar Saveski, Sasko Drvosanski</b> St.”Kliment Ohridski” University of Bitola, Faculty of Technolgy and Technical Sciences Veles, Macedonia
<b>14:10 - 14:20</b>	Efficacy and safety of herbal medicines in obesity management. <b>Valentina Pavlova</b> St “Kliment Ohridski” University of Bitola, Faculty of Technology and Technical Science Veles, Macedonia
<b>14:20 - 14:30</b>	Learning about the importance of healthy eating in prevention against obesity and nutrition-related chronic diseases <b>Emilija Nedanovska</b> St “Kliment Ohridski” University of Bitola, Faculty of Technology and Technical Science Veles, Macedonia
<b>14:30 - 14:40</b>	Obesity in young age and the benefit of balanced nutrition <b>Marija Ristevska</b> University of Bitola St „Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia
<b>14:40 - 14:50</b>	Mediterranean diet in prevention of obesity and cardiovascular disease <b>Marija Madjovska, Aleksandra Manusheva, Kristina Dimitrusheva</b> University of Bitola St „Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia
<b>14:50 - 15:00</b>	The importance of proper nutrition for pregnant women in the prevention of malnutrition, including obesity <b>Davor Daniloski</b> University of Bitola St „Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia
<b>15:00 - 15:15</b>	<b>Discussion</b>
<b>15:15 - 15:30</b>	<b><i>Coffee break</i></b>
<b>Session 3</b>	<b>Advanced perspectives of improved fitness in reducing obesity and related chronic diseases</b>
<b>Session Chairs</b>	<b><sup>1</sup>Magdalena Damjanovska, <sup>2</sup>Gorica Pavlovska, <sup>2</sup>Angel Panovski</b> <sup>1</sup> First private University FON, Faculty of Sport Management, Skopje, Macedonia. <sup>2</sup> St “Kliment Ohridski” University of Bitola, Faculty of Technology and Technical Sciences Veles, Macedonia.
<b>15:30 - 15:40</b>	The impact and conestions of some motor abilities on body mass index at the 18 years old students <b><sup>1</sup>Magdalena Damjanovska, <sup>2</sup>Serjoza Gontarev</b> <sup>1</sup> First private University FON, Faculty of Sport Management, Skopje, Macedonia; <sup>2</sup> University St. „Ciril and Methodius“, Faculty of physical education and sport, Skopje, Macedonia
<b>15:40 - 15:50</b>	Evaluation the influence of sporting activities on cardiorespiratory fitness of youth in creating national standards

	<p><b>Vera Simovska-Jarevska</b> University of Bitola St „Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Institute of Sports Medicine, Skopje, Macedonia.</p>
<b>15:50 - 16:00</b>	<p>Correlation analysis between nutritional status and some function-biochemical parameters in physical active and sedentary school-aged children in the region of Skopje.</p> <p><b>Aleksandra Leova. Mentor: Vera Simovska-Jarevska*</b> Master Studies of Food Safety and Quality Management at the Faculty of Technology and Metallurgical Sciences, Skopje, Macedonia. *St. Kliment of Ohridski” Univeristy of Bitola, Faculty of Technology and Technical Sciences Veles, Institute of Sports Medicine, Skopje, Macedonia.</p>
<b>16:00 - 16:10</b>	<p>Athletes and the importance of Sport Nutrition</p> <p><b>Angel Panovski</b> University of Bitola St„Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia</p>
<b>16:10 - 16:20</b>	<p>Dietary protein and essential amino acids supplementation for athletes-bodybuilders: From requirements to optimum adaptation</p> <p><b>Andrej Simovski<sup>1</sup>, Vladimir Nikolovski<sup>1</sup>, Ana Naseva<sup>2</sup></b> University of Bitola St„Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia<sup>1</sup>, University of Skopje, Faculty of Medicine, Skopje, Macedonia<sup>2</sup></p>
<b>16:20 - 16:30</b>	<p>Nutrition and physical activity in obese subjects</p> <p><b>Sonja Panovska. Mentor: Slavica Shubeska-Stratrova*</b> University of Bitola „St Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia, *Clinic of endocrinology, diabetes and metabolic disorders, Skopje, Macedonia</p>
<b>16:30 - 16:40</b>	<p>Physiological base of method for programming physical activity in obese young individuals</p> <p><b>Vladimir Nikolovski<sup>1</sup>, Andrej Simovski<sup>1</sup>, Ana Naseva<sup>2</sup></b> University of Bitola St„Kliment Ohridski”, Faculty of Technology and Technical Science Veles, Macedonia, University of Skopje, Faculty of Medicine, Skopje, Macedonia<sup>2</sup></p>
<b>16:40 - 16:50</b>	<p>Epidemiology of Obesity in Macedonian Youth</p> <p><b>Emilija Spasovska-Mojsovska</b> St.”Kliment Ohridski” University of Bitola, Master study of Nutrition at the Faculty of Technolgy and Technical Sciences Veles, Macedonia</p>
<b>16:50 - 17:00</b>	<b>Discussion</b>
<p><b>17:00 – 17:30 Conclusion and Preparation the REPORT of the First Scientific Symposium for Obesity in Macedonia</b></p>	
<p><b>Closing Satellite Symposium in Macedonia</b></p>	

## Papers

1. Socioeconomic inequalities in diet and physical activity among Macedonian population and model of behavioural modification

**Simovska-Jarevska V<sup>1,2</sup>, Martinovski S<sup>1</sup>, Antoska V<sup>1</sup>, P Kalevska T<sup>1</sup>, Pavlova V<sup>1</sup>, Nedelkovska-Nikoloska D<sup>1</sup>, Uzunoska Z<sup>1</sup>, Blazevska T<sup>1</sup>**

<sup>1</sup>Department of Nutrition, Faculty of Technology and Technical Sciences, University St. Kliment Ohridski, Bitola, Republic of Macedonia;

<sup>2</sup>Nutrition Research Department, Public Health Institute of Sports Medicine, Skopje, Republic of Macedonia

2. Modeling Nutritional Business Models of Consumer Behavior when Buying Food Products

**Martinovski S, Simovska-Jarevska V, Spirovska-Vaskovska R.**

St. Clement of Ohrid, University of Bitola, Faculty of Technology and Technical Sciences Veles.

3. Healthy and balanced intestinal micro flora as precondition for maintaining and regulating normal body weight

**Drvosanski S.**

University St. Kliment Ohridski, Bitola, Faculty of Technology and Technical Sciences, Veles

4. Food and Nutritional Practices During Religious Fasting in the Population of diversified Religious denominations in the Republic Of Macedonia

**Starova V.**

University St. Kliment Ohridski, Bitola, Faculty of Technology and Technical Sciences, Veles

Scientific Satellite Symposium for  
**Euro Global Summit & Medicare Expo on  
Weight Loss**

26 – 27 June, 2015

Hotel “Premier”, Bitola, Republic of Macedonia

# Research Papers

Satellite Symposium for Euro Global Summit & Medicare Expo on  
**Weight Loss**

**Socioeconomic inequalities in diet and physical activity among Macedonian population and model of behavioural modification**

Simovska-Jarevska V<sup>1,2\*</sup>, Martinovski S<sup>1</sup>, Antoska V<sup>1</sup>, Pavlova V<sup>1</sup>, Damjanovski D<sup>1</sup>, Uzunoska Z<sup>1</sup>, Kalevska T<sup>1</sup> and Blazevska T<sup>1</sup>

<sup>1</sup>Department of Nutrition, Faculty of Technology and Technical Sciences, University St. Kliment Ohridski, Bitola, Republic of Macedonia

<sup>2</sup>Nutrition Research Department, Public Health Institute of Sports Medicine, Skopje, Republic of Macedonia

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**Introduction:** A large number of NCD's such as cardiovascular disease (CVD), type 2 diabetes mellitus (T2DM) and certain types of cancer are preventable through modification of several strong causal behavioral risk factors. Extensive research during the last few decades has identified that behavioral factors such as unhealthy diet, inadequate physical activity and tobacco use are the main global targets in prevention of NCD's. A cornerstone is the WHO Expert Report on Nutrition and Prevention of Chronic Diseases from 2002. Based on this background, the World Health Assembly in 2004 adopted the WHO's Global Strategy on Diet, Physical Activity and Health [1].

People's behaviours are significantly influenced by their social and physical environment. The greatest potential for NCD's prevention and control lies in population-based integrated preventive interventions and health promotion targeting behavioral factors. Improving country-level surveillance, monitoring and research of behavioral risk factors should be a top priority of NCD's prevention and control [2].

Combining behavioral, social and medical theories is the most practical approach to develop strategies and programmes for NCD's prevention and health promotion [3]. The burden of NCD's is increasing rapidly in the developing world as a result of changes in lifestyles. Republic of Macedonia needs to address its growing NCD's epidemic through health promoting partnerships, strategy and programme. High mortality by CVD and cancer as well as political transformation together with the social changes and economic limitations had a great influence on public health in the country. The first research study on health-risk behaviors among Macedonian population was carried out in 2002 year [4] using the locally adapted the WHO CINDI Health Monitor questionnaire. Research evidence has lead to initiatives to develop and implement a national inter

vention programme for NCD's prevention and health promotion "WHO CINDI Programme in Republic of Macedonia" with aim to change population behaviour [5]. From a public health perspective, investments in organized work in the field of food and nutrition education, primarily at the universities are multiple and are returned to the existing policy and community [6].

We need more scientific knowledge on how socioeconomic differences in dietary behavior and PALs among Macedonian adult population could be explained. It is known that education might provide potential cognitive resources which influence the individual's healthy choices. In addition, educational success may forecast future success: better jobs, higher income, good living area, better housing etc.

Also, it is known that for families with low levels of income, prices are important drivers for food selection, whereas a higher income is related to a higher relative importance of individual health status. Numerous studies have confirmed that a low socioeconomic status is related to less healthy dietary behavior and lower participating in sport, but certain reasons for this remain unknown.

**Objectives:** The general objective of the study was to obtain cross-sectional data from a population-based survey, to analyse and evaluate the results for socioeconomic differences: income and education on the consumption of the main health-related foods and PALs among Macedonian adult population. The specific objective was to propose a health promotion model for effective behavioural modification.



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### Material And Methods:

#### 3.1. Population Studied

The cross-sectional, population-based study of health-risk behavior was conducted at national level in Republic of Macedonia in 2012. The target population was drawn from the general population and the sample represented the target population. The sample size included 1020 participants, with the core age range from 19 to 65 years. The study was carried out between March and May 2012 in Republic of Macedonia. The study was conducted using questionnaires. The method of data collecting was a personal face-to-face interview. The sampling unit was the individual, not a household. Basic characteristics such as age and gender of the participants in the sample were incorporated in the data in accordance to the CINDI Health Monitor: Proposal for Practical Guidelines [7]. The survey was vali-dated in Finland and Baltic countries known as FINBALT Health Monitor.

#### 3.2. Dietary Method

Food consumption was measured as the frequency of consumption of the following food groups during a week: type of bread, milk and dairy products related to fat, meat, and 400 gr./day of raw fruit and vegetables, using the food frequency questionnaire (FFQ) [8].

According to the survey, regular consumption of certain foods is defined as consuming a certain food 5 or more times a week and occasional consumption of certain foods means consuming certain foods 2-4 times a week. The third group included participants who consumed a certain food once a week and those participants that don't consume certain foods.

#### 3.3. Physical Activity Questionnaire

For assessing physical activity behaviour of the study participants, a self designed, short and simple questionnaire focused on leisure time physical activity (LTPA) was applied [9]. It is provide a general classification of physical activity patterns performed during a week. Data collected is expressed in certain intensity categories of physical activity including a comprehensive list of examples of physical activity such as brisk walking, and easy bicycling known as physical activity with moderate intensity, and walking and household activities, gardening and other activities known as light activity with low intensity. Organized sports including running, jogging known as strenuous activity are the forms of LTPA that are more planned and structured with aim at more specific objectives for example to improve physical fitness. In the study questionnaire, physical inactivity was noted using term "no activity". It is known that sedentary behaviors refers to activities that do not increase energy expenditure such as sleeping, lying down, playing computer games, watching television or other screen-based entertainments. Physical inactivity interrelates as well as associates with health outcomes uniformly.

This method is a valuable tool in descriptive epidemiology studies designed to detect where the exact relationship between physical activity intensity and health outcome such T2DM's prevention is not known of the population under study.

#### 3.4. Socioeconomic Measures

Indicators of socioeconomic inequalities in health behavior by age and gender were income and edu-cational level.

##### 3.4.1. Income

Individual income was calculated by the household budget divided with the number of family members. It was measured as monthly income and grouped in three classes: up to 75 Euros, from 75 to 150 Euros and over 150 Euros per family member.

##### 3.4.2. Education

The educational level was measured by the highest level of education that has successfully

been completed. The choices related to education were divided in three educational levels such as primary (elementary), secondary and university degree.

The database included sample data: identification code, age, gender of each participant, place of residence and questionnaire data. The results were presented in percentages (%) of total numbers of the participants in the study. The results were processed with Microsoft Excel.

**Results:** Basic characteristics such as age, gender and socioeconomic characteristics of the participants in the sample are shown in Table 1.

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**Table 1:** Demographic and Socioeconomic Data for Adult Enrolled in the Study in 2012

Demographic characteristics and socioeconomic factors	Range	Number of participants	%
Age (years)	19 to 65	1020	100
Gender	Male	449	44.01
	Female	571	55.98
Education	Elementary	141	13.82
	Secondary	499	48.92
	University degree	380	37.25
Monthly in-come per fam-ily member	Up to 75 EUR	330	32.35
	From 75 to 150 EUR	454	44.50
	Over 150 EUR	236	23.14
Total Participants:		1020	100

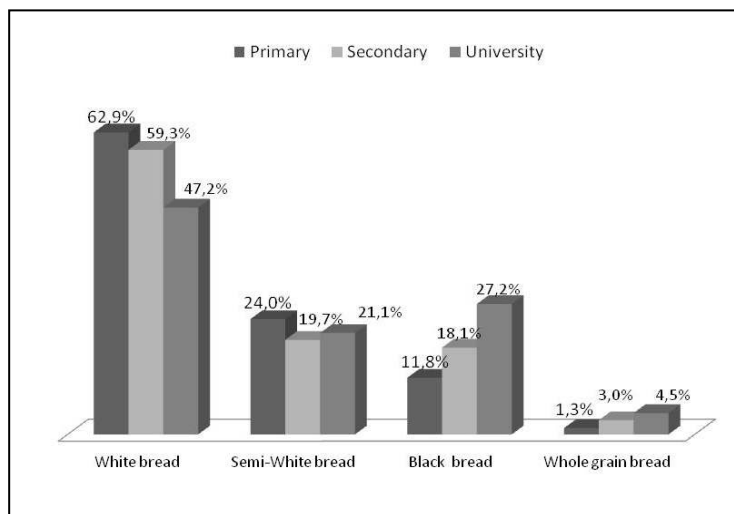
**3.1. Dietary behaviors**

A considerable part of the health-risk behavior study deals with monitoring of dietary behaviour in Macedonian adult populations in 2012.

**4.1.1. Type of bread**

Study results showed that 76% consumed white and/or semi-white bread while 24% of all participants consumed bread enriched with whole grain. Participants with better income consumed black and whole grain bread more frequently in comparison with those with low socioeconomic status. Also, the use of these types of bread was more prevalent among higher educated study participants (Figure 1).

**Figure 1.** Proportion (%) of participants using different type of bread by education levels of adults in 2012 year



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### 4.1.2. Milk and dairy products

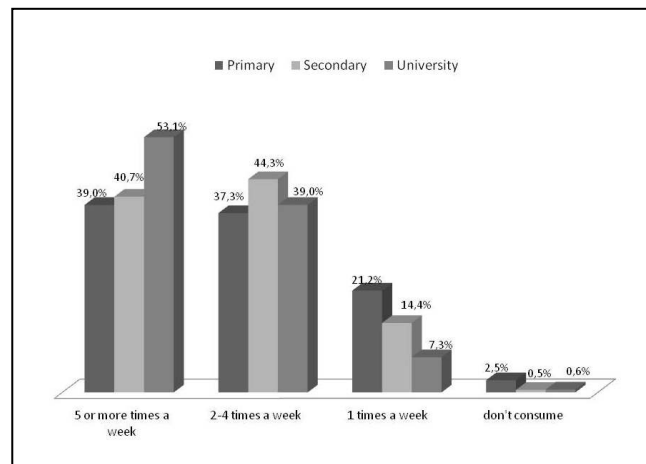
72.5% of participants from all age groups consumed milk and/or yogurt and dairy products regularly (everyday or 2-4 times a week). The monthly income of the participants had a high impact on the frequency of consumption of selected food products. Less frequent consumption of selected foods in Republic of Macedonia in 2012 was related to lower income. In terms of content of fat in milk and dairy products, frequent use of low-fat products can be seen among people with higher

education level. In general, we noticed less frequent consumption of dairy products that are fortified with certain vitamins and minerals. Perhaps media education and established statements for food labeling and health claims are needed.

### 4.1.3. Fruit and vegetables

75% of the participants in all age groups consumed 400 gram/day fresh fruits and vegetables of which nearly 51% regularly (5 times a week and more) consumed selected food groups (Figure 2).

**Figure 2.** Frequencies of fruit and vegetables consumption by education levels of adults in 2012 year



The income and education have a low impact on the frequency of vegetable and fruit intake during a week. The main reason is the relatively low price, availability and the relatively good production of vegetables and fruits in Republic of Macedonia.

### 4.1.4. Meat

Regarding the consumption of meat and meat products, most of the study participants consumed chicken and pork more frequently while fish was consumed by about 20% of all participants. One of the reasons is the low price of chicken in the country.

With aging, the number of people who consume chicken has decreased while the trend of those who consume fish has risen, whereas 19% of all participants consumed fish in accordance with the recommendations. Those participants with university degree and highest income, more frequently used fish and beef.

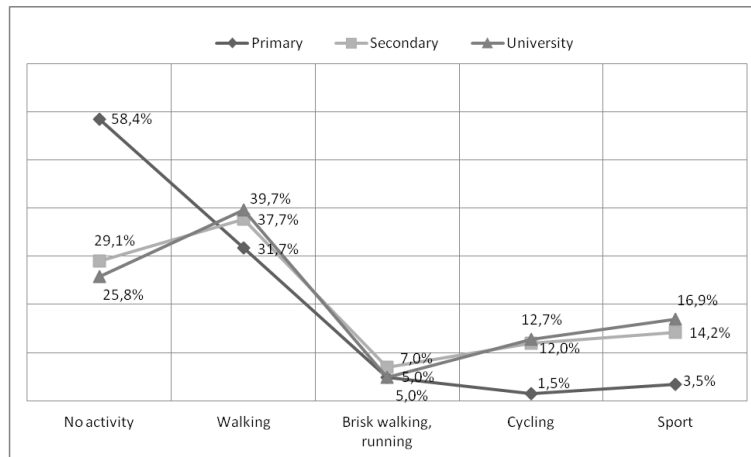
### 3.2. Physical activity behaviour

Over half of all participants in the study had low level of physical activity and did not meet the current recommendations for health-enhancing physical activity. The results showed that the monthly income has little impact on the level of physical activity with low intensity such as walking. 37.8% of all participants from families with different monthly income were walking.

Prevalence of sedentary participants, the ones with lower levels of educations was 58.4% of all study participants (Figure 3).

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**Figure 3.** Proportion (%) of physically active participants aged 19 to 65 years by education



**Discussion:** It is known that morbidity and mortality from main NCD's such as CVD, T2DM and certain cancer can be prevented by changes in behavioral risk factors associated with the lifestyle of the population, primarily the reduction of unhealthy diet and physical activity behavior. Insufficient physical activity is the 4th leading risk factor for mortality. Related to the physical inactivity, the WHO proposed target is 10% relative reduction in prevalence of insufficiently physically active adults aged  $\geq 18$  year by 2025 [10].

This is the first national "cross-sectional" study in Republic of Macedonia conducted with the aim to analyze and evaluate the research data of the impact of the socioeconomic differences including educational levels and income on the consumption of the main health-related foods and PALs of the population aged 19-65 years.

At European level, the differences in food consumption based on education and income were ex-amined in adult population (18-65 years) in 1985-1997 as part of the FAIR-97-3096 project "Compatibility of The Household and Individual Nutrition Survey in Europe and Disparities in Food Habits" [11]. 47 studies from 15 countries were selected. The identified studies were mainly large-scale national dietary, household budget and health behavior surveys. The main results of the meta-analysis were that people belonging to higher social classes have healthier diets. Those with higher education, with the exception of the South, tended to consume more vegetable and fruit, and less fat.

The socioeconomic differences in food consumption were not homogenous across Europe. The pat-terns varied by food groups and region.

Project results of food-related disparities were used in planning the food and nutrition policy, pro-programmes and dietary interventions aimed at promoting health among lower social classes and risk groups.

Concerning to clinical and epidemiology studies conducted over the past ten years in Republic of Macedonia, results have shown that reduced levels of physical activity were found in 64.5% of the adult population independent of educational level [12]. Compared with the results of the study conducted in 15 European countries, 31% of adult participants were sedentary [11].

In accordance to the United Nations Political declaration on the Prevention and Control of Non-communicable Diseases [13], the Government should implement programmes that tackle the social determinants of NCD's with particular reference to the health of the poor, fair financing, and equitable access to primary health care services and integrated health and nutrition care.

Also, Government should adopt evidence-based global strategies developed by the WHO including the Global Strategy on Diet, Physical Activity and Health [1] and other programs such as the Disease Control Priorities Project as the foundation of

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future evidence-informed policies to reduce the burden of NCD's.

**Conclusion:** Various socioeconomic groups are differently affected by political and economical changes. Assessment of the trends in health and health behavior of different socioeconomic groups in Republic of Macedonia is essential for planning and evaluation of NCD's prevention and health promotion programme.

Changes in food content, guidelines and policy on food labeling and health claims, marketing, city planning that facilitates active transport (as opposed to motorised) are among the measures that will help get the NCD's epidemic under control.

### Implication For Research And Practice

The first complex results of our study indicate that the national strategy and programme for improving health through nutrition and physical activity should be focused on younger age groups, especially female and older adult population, particularly women.

In connection to the changes in dietary habits, it is essential to have a radical change in the market and food production, including a better access for the population to whole grain bread, fresh fish, as well as to eliminate the "fast food" in order to reduce the risk of common NCD's in Republic of Macedonia.

Also, the country does not include taxes on "target" foods such as various food products ("soft" drinks), nutrients who have low health effects such as products with high energy density and low nutritional value, foods with high presence of the saturated fat of animal origin and other similar foods. Higher taxes will significantly affect the consumption of healthy and traditional food.

This will also aid future analysis of the impact of fiscal policy on consumption of food on population level [14]. Financial funds derived from taxes on these foods would be used to address priority problems in health, as well as offer possibilities for modification of the food offered.

**Model Of Behavioural Modification:** Application of the health promotion programme on changes in the population behaviour is the most stable and effective way to promote healthier nutrition and physical activity behaviour among those with low socioeconomic position in the Republic of Macedonia.

Behavioral modification should include several steps: increased health knowledge, training for practical skills, social support and guidance, environmental modification including food industry, marketing and restaurants, mass communications that affect psychosocial changes [15] and community as a complex network of organizations through development of health projects.

Reaching critical mass is crucial in the health promotion to change population behavior. In addition, the strength of community-wide programmes is to influence the community as a whole so that the desired behaviours are as easy as possible combining leadership with partnership [3].

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