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CONFERENCE SYMPOSIUM

2nd and 3rd Comparative Health Sciences Symposia

The 2nd and 3rd Comparative Health Sciences Symposia were convened in Budapest, Hungary to address “**Healthy and Active Ageing – New outcomes in the field of prevention and rehabilitation**”, and “**Humane Ageing**”.

The symposia were under the patronage of the Head of the Faculty of Health Sciences, Semmelweis University, Prof Dr Zoltán Zsolt NAGY, symposia moderators were Prof Dr Csaba NYAKAS, professor emeritus and Gabriella DÖRNYEI PhD, Vice Dean for Clinical Affairs.

Rowe and Kahn declared in their influential paper published in 1987 the three major elements of successful ageing: “freedom from disease and disability, high cognitive and physical functioning, and social and productive engagement”. In line with this, the 2nd and 3rd Comparative Health Sciences Symposia had three major objectives: to identify the most important factors in healthy and active ageing, to provide a broad insight in the biomedical, psychological and social aspects of humane ageing, and to set new aims in the field of prevention and rehabilitation for the elderly population.

The symposia were attended by 15 leading experts from Hungary. The Symposia was opened by Professor Zoltán Zsolt NAGY (Dean of the Faculty of Health Sciences and Director of the Department of Ophthalmology, Semmelweis University, Budapest, Hungary) who highlighted the crucial role of environmental, psychological, and social factors, as well as the importance of behaviours such as getting regular exercise, eating a healthy diet, not smoking, and not drinking excessively, which can help to prevent or moderate many common chronic diseases. Ageing studies show that many chronic diseases are preventable or modifiable and are related to social, cultural, environmental, and lifestyle factors. Therefore, it is important to emphasise individual differences and to relate the physical factors of old age with the social, interpersonal, and psychological environments.

2ND COMPARATIVE HEALTH SCIENCES SYMPOSIUM

Healthy and Active Ageing – New outcomes in the field of prevention and rehabilitation

Name	Presentation	Institute
Illés KOVÁCS, Zsolt Zoltán NAGY	The ageing eye – age-related eye problems	Department of Clinical Ophthalmology, Faculty of Health Sciences, Semmelweis University, Budapest, Hungary
Mária HOYER	The health psychological approach to normal ageing	Department of Applied Psychology, Faculty of Health Sciences, Semmelweis University, Budapest, Hungary
Ferenc László FRIEDRICH	Food innovations for quality ageing	Faculty of Food Science, Szent István University, Budapest, Hungary
Endre MÁTHÉ	Genetic control of the cellular metabolic profile	Institute of Food Technology, Faculty of Agricultural and Food Sciences and Environmental Management, University of Debrecen, Hungary
Csaba NYAKAS, K BRETZ	Gerontokinesiological aspects of pulsed EMF stimulation	Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest, Hungary Institute of Sports and Health Sciences, University of Physical Education, Budapest, Hungary
Ádám LELBACH	Post-sports career healthy ageing; the Janus-faced, high-performance sport	Dr Rose Private Hospital, Budapest, Hungary
Ákos KOLLER	The role of physical activity in maintaining vascular health	Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest
Béla SZÉKÁCS	Prevention of frailty syndrome – from a gerontological/geriatric aspect	2nd Department of Internal Medicine, Semmelweis University, Budapest

3RD COMPARATIVE HEALTH SCIENCES SYMPOSIUM

Humane Ageing

Name	Presentation	Institute
Győző PÉK	Health promotion among the elderly	Institute of Psychology, Department of Personality and Clinical Psychology, University of Debrecen, Debrecen, Hungary
László SZABÓ	The relevance of urinary incontinence and care with ageing	Department of Family Care Methodology, Faculty of Health Sciences, Semmelweis University, Budapest, Hungary
Miklós SZENDRŐI	Large joints and the ageing process – how can we outlive our articular cartilage?	Department of Orthopaedics, Semmelweis University, Budapest, Hungary
Ákos KOLLER	Cardiovascular aspects of ageing - Experimental studies	Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest
Romána ZELKÓ	Characteristics of age-related pharmacotherapy	Department of Pharmacology and Pharmacotherapy, Semmelweis University, Budapest
Katalin LENTI, Dezső MÓDOS	Probiotics in a different light	Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest
Ferenc László FRIEDRICH	The aspects of humane ageing in food development	Department of Chemistry, University of Cambridge, UK
Csaba NYAKAS	Nutrition, health, and ageing	Faculty of Food Science, Szent István University, Budapest, Hungary
		Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest

ABSTRACTS

Nutrition, health, and ageing

Cs NYAKAS

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In European countries, including Hungary, ageing is posing increasing challenges to health care. The number of old adults and the growing proportion of people over 80 years of age is a relevant factor in both geriatric care and preventive gerontology. Prevention plays a key role in this care, complementing rehabilitation and prehabilitation. The stages of ageing can be defined in terms of biological, physiological, and pathological changes, and be approached from a psychosocial perspective. Prevention and care must include not only physical therapy and mental/psychological support, but appropriate nutrition must also be considered. Diet in old age must be adjusted to the physiological, pathological, and nutritional characteristics of people in each stage of ageing.

Ageing begins right after conception; thus, the health status has an impact on ageing during the whole life span. The foetal/neonatal stage can be highlighted, as nutrients in this period induce long-lasting changes in the human body (metabolic imprinting). A good example is perinatal LC-PUFA (polyunsaturated fatty acid) supplementation, which has effects

detectable even in old age. Apart from genetic/epigenetic regulations, metabolic changes can be observed, which affects body weight (obesity), as well as glucose and fat metabolism. The other long-lasting change can be detected in the development and the ageing of the central nervous system.

The presentation explores diet in old age, according to the nutritional needs and solutions in all stages of ageing – in terms of absorption, metabolism, vitamin and mineral deficiencies, impairments in motor and neural functions, with special focus on amyotrophy, falls and fractures, as well as dementia.

The relevance of urinary incontinence and care with ageing

L SZABÓ

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The average prevalence of incontinence in women is 4.6–58.5%, in man 1.6–24%. 30–60% of ageing women are affected, and this number increases with age. At the same time, there is a large number of hidden patients (60%) who feel ashamed of their condition, as urinary incontinence is considered a taboo topic. The symptoms accompanying incontinence (wet spots on clothing, smell of urine) evoke negative feelings or rejection in the patient's social environment. Incontinence imposes great mental and financial burdens not only on these individuals but

on their environments and the society as well, while it is a condition that can be easily treated, cured, and patients can even become asymptomatic. The treatment of patients with urinary incontinence requires a multidisciplinary approach, as it includes prevention, exercising, physical therapy, dietary advice, medical, surgical, and symptomatic treatment, and rehabilitation. Effective symptomatic treatment starts at primary care, where the patient's profile (self-care, the severity of incontinence, body size, type of discharge) is precisely recorded and appropriate symptomatic treatment is provided as indicated. Commencing treatment early is essential for successful diagnostic and therapeutic procedures. Positive treatment outcomes can only be achieved with therapy that takes the patient's personal characteristics, opportunities, and capabilities into consideration. The main aim of incontinence care is the patient's complete social reintegration, which can only be realised after the patient's symptoms are stabilised with pharmacological and/or instrumental treatment and the causal treatment is started as early as possible.

What has the Hungarian Continence Society done so far? It has organised trainings, lectures, published books and articles, made a Consensus Conference and the “A Drop of Self-confidence” programme possible, and worked out a guideline on incontinence.

The short-term goal of the guideline is to improve the diagnosis and management of urinary incontinence in Hungary. The long-term goal is to provide evidence-based professional recommendations for a country-wide healthcare network that treats incontinence according to the level of progression.

Large joints and the ageing process – how can we outlive our articular cartilage?

M SZENDRÓI

Department of Orthopaedics, Semmelweis University, Budapest, Hungary

Toward the end of the reproductive age the degeneration of hyaline cartilage in joints begins, which is a unidirectional process – according to our present knowledge. Destruction of chondrocytes is caused by genetic and external factors. 9–12% of people aged 65–75 have arthrosis that require hip or knee treatments. Based on this it can be claimed that arthrosis is a pandemic today. In Hungary ca. 14,000 hip and 6,000 knee surgeries are carried out in a population of 10 million people. Primary prevention of arthrosis is healthy lifestyle, regular physical activity, and maintaining an optimal body weight. Secondary prevention options include screenings, surgical correction of hip deformities, and cartilage replacement therapies.

Cardiovascular aspects of ageing – Experimental studies

A KOLLER

Department of Morphology and Physiology, Faculty of Health Sciences, Semmelweis University, Budapest

Although ageing and old age is still not precisely defined, in people over 60 years of age changes in cardiovascular function can be clearly measured. Systolic and diastolic blood pressure increases even in resting position, while heart frequency is similar to rates observed in young adults. At the same time, physical activity causes higher increase and slower normalisation of blood pressure and heart rate. In old age the beta-adrenergic receptor activity is reduced, and the heart cannot achieve maximum cardiac output. Accordingly, cardiovascular and skeletal muscle performance decreases with load and exhaustion can be sooner experienced, i.e. the reserve-capacity of the cardiovascular system (heart and vessels) decreases, due to the longer contractile and refractory periods. The speed of ventricular contraction decreases, the period of diastolic ventricular filling increases, and the heart wall thickens. Baroreflex decreases, leading to orthostatic hypotension (and fall!). The walls of the aorta and the large arteries thicken and their flexibility decreases, which contributes to increased systolic blood pressure in old age. The vasoconstrictor capacity of microvessels increases, while their vasodilator capacity decreases. The smooth muscle thickness of microvessels increases, the beta-adrenergic effect on them decreases, resulting in decreased arterial vasodilator capacity, which is further worsened by the maintained alpha-adrenergic effect (smooth muscle contraction). Furthermore, the process is endorsed by decreased dilatational capacity due to the decreased production of endothelial vasodilator factors (nitrogen monoxide, prostaglandins) and the increased production of vasoconstrictor factors (thromboxane A₂, endothelin). Oxidative stress and low-level inflammatory processes are responsible for the molecular background. These changes lead to increased peripheral arterial tone in ageing. With proper physical activity and sports these age-related changes can be reduced and cardiovascular fitness can be preserved.

Characteristics of age-related pharmacotherapy

R ZELKÓ

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The risk of pharmacotherapy increases with age, which is partly caused by age-related physiological changes, partly by the pharmacological regimens including a large number of medications due the presence of various comorbidities. Almost 80% of people over 65 years of age take at least one medication regularly, and the number of elderly taking two-three medicines simultaneously is high. Age-related physiological changes that affect the absorption of medicines in the human body are the following:

- decreased gastrointestinal motility
- increased proportion of adipose tissue
- body water content decreases with 15% between the ages of 20 and 80
- decreased liver perfusion and decreased liver size
- deterioration in kidney function between the ages of 20 and 80 (35%)

Therefore, the absorption of certain medicines can be less effective due to altered gastric juice pH values and slower bowel movements. The changes in the fat and water content of the body impact how the medicines absorbed are distributed to the tissues. Changes in liver and kidney functions slow down the excretion of medicines, which can thus stay and accumulate in the body longer and have prolonged and increased effects and side-effects. Sensitivity to medicines usually increases, i.e. the same amount of medicine has more enhanced effects in older adults than in younger patients.

The presentation explores the causes of inappropriate adherence by analysing in detail how the selection of different medications can affect the effectiveness of therapy.

It can be concluded that the population of older adults is highly heterogeneous, ranging from completely healthy individuals to polymorbid patients. Accordingly, it is fundamental to find the appropriate pharmacotherapy based on a general assessment of the patient's condition and to use tools that help the proper dosing of medications.

Probiotics in a different light

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² Department of Chemistry, University of Cambridge, UK

Intestinal flora forms a complex community of microorganisms in the colon. This community changes with diet, age, or to different impacts such as an antibiotic treatment or a disease. It is common practice in medicine that in antibiotic treatment taking probiotics is recommended to help restore the balance of gut flora, especially in old adults. This practice may be reconsidered in line with the latest studies which found that giving probiotics results in no or just transient change in the intestinal flora.

A further problem is that with probiotic treatment the complex and diverse intestinal community made up of several species is meant to be replaced with a product consisting of only a small number of species, resulting in a decrease in the diversity of gut flora and thus can lead to the development of new pathologies.

Many probiotics, which are non-medicinal products, contain antibiotic resistant strains so that specific bacteria could be selected. Unfortunately, certain probiotics contain resistant strains that can transmit resistance genes to other bacteria in the gut flora and to pathogens. This can negatively affect not only the patient but the environment as well, since through faecal matters these genes can be transmitted to the environment and increase the risk of the development of resistant pathogens. It should also be taken into consideration when giving probiotics that the horizontal gene transfer means a real hazard to the fight against antibiotic resistance.

Recent studies point out that faecal microbiome transfer can better reproduce the desired bacterial community, for example, in *Clostridium difficile* infection of the elderly.

Food innovations for quality ageing

FL FRIEDRICH

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As living standards improve, changes can be observed in the age composition of populations in modern societies. The increase of the average age has resulted in an increasing proportion of elderly people in the population and a widening of this group's age-range. It means that elderly people are becoming a larger segment of consumers. In this stage of life, there are many natural changes in the human body, such as the loss of muscular performance, physical decline, changes in digestive processes, loss of sensory ability, and changes in general health. There are significant differences between the initial and final stages of this life span; therefore, this cycle needs to be divided into smaller segments to ensure an appropriate, 'humane' ageing for the different age groups. Nutrition, food and eating habits play an important role in healthy ageing. It is particularly important to consume a higher proportion of adequate and easily digestible proteins and essential fatty acids, and to wisely select the types of carbohydrates and the amount and ratio of trace elements and bioactive components. It is also important to adapt the organoleptic properties of foods to the needs of the age groups, including the chewability, the salty, sweet and spicy taste, the colour and the font size on the packaging. Impairment of the immune system can also be observed in ageing populations. Therefore, it is of utmost importance to reduce food safety risks by applying appropriate food preservation procedures in food and product development. Particular attention must be paid to the gentle preservation and processing methods that preserve the biological value and beneficial sensory properties of food ingredients. Besides, the enrichment of other bioactive components, antioxidants, vitamins, pre- and probiotics that increase vitality and the use of modern separation techniques in food production are crucial. These food processes can ensure one of the basic prerequisites for humane ageing: the provision of specific quality food.

Call for Papers

M HOYER: The health psychology approach to normal ageing (review article)

A LELBACH et al.: Post-sports career healthy ageing: the Janus-faced, high-performance sport (review article)

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