



*Old age should not be viewed as a “disease” nor  
should a time clock be put on aging  
(Soltis)*

## Introduction

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Gerontology and Geriatrics are developing from the beginning of the 20-th Century, but not so extensively and intensively, as it is the case with other scientific disciplines.

Gerontology is science dealing with changes of human body in somatic, psychical and social aspects whereas geriatrics is an interdisciplinary science, dealing with diseases, prevention and curing in the elderly.

The first manual of Geriatrics was written by Seidel and Schwalbe in the first part of the 20-th century, and the first medical journal dealing with this field was published in 1938, with the name: *Zeitschrift für Alternsforschung*. The first International Gerontological congress and the first Gerontological Society was conducted in Liege in 1950. In some parts of the World, Gerontology and Geriatrics are two independent disciplines, but in some European countries including Croatia, Geriatrics is a part of a wider discipline:

Gerontology. We are still conscious that criteria of an elderly people are based arbitrarily on chronological age of 65 or more, although aging is a process starting after ages of 30. Therefore it is necessary to define biological criteria of omitting chronological ones, what could be done according to criteria based on non-invasive diagnostics of cardiovascular, respiratory and renal functional parameters.

The average length of life at the beginning of the 20th century was about 50 years, and at the end of the century, it was about 80 years. Humans desire to live long, but quality lives certainly requires medical care. According to data in Croatia, the average life expectancy from 73 years in men and 78 years in women in the year 2001, has increased for both sexes to 75 and 80 years in the year 2011, respectively. Simultaneously in Croatia we are facing depopulation processes: which were observed more than 20 years ago. Furthermore we are also facing both generational and natural depopulation processes, in 18 out of 21 Croatian regions. A number of younger persons able to work is decreasing, with concomitantly increasing of a number of elderly people.

Elderly people are more often suffering from chronic diseases and take medications more frequently than others, in spite of the fact that many chronic diseases cannot be treated with drugs. The elderly people takes more than 25 per cent of drugs than the total population, and more than 25 per cent of them commit severe mistakes in taking medications i.e. in too high or too low doses. The side-effects of drugs are observed in

10 to 25 per cent of patients belonging to older age groups. If two drugs are administered simultaneously in elderly patients, the chance of adverse drug interaction is about 5 per cent, if five drugs are administered simultaneously, the chance for side effect, is about 50 per cent, and if eight drugs (or more) are administered simultaneously, the chance for side effects reached to 100 per cent respectively. The regularity of drug administration in elderly patients is inversely proportional with the number of drug taken.

Thus the side effects of drugs could seem like a "new" illness.

This special issue of the journal, dealing with some current, questionable or unsolved problems in the field of Gerontology and Geriatrics, is divided into five chapters. First article deals with telomere and its shortening as a major contributor of cellular aging connected with the development of some chronic diseases as diabetes mellitus, cardiovascular diseases and malignant tumors. For the first time, it is demonstrated that comprehensive lifestyle changes as is physical exercise and changing of nutritional and other lifestyle habits, could slow aging processes at the molecular level.

The second part deals with the strategic goals on the monitoring of health care needs, and programs of primary, secondary and tertiary prevention for the elderly in Croatia. The third part is dealing with physiological aspects of aging. It is started with anthropometric indices of nutritional status in the elderly in Croatia, as an essential tool in the geriatric nutritional assessment. The equations developed for estimating the height and weight proved to be more appropriate than WHO standards, proposed for use in everyday practice. The other article deals with changes of human organism during primary (physiological) aging. It is illustrated with results of our investigations of measured parameters of functional changes in internal organs followed by morphological changes in the elderly. Aging is a universal phenomenon, with many functional and structural changes of internal organs which occur after years of 30. In regard to physical exercise, priority should be given to activities stimulating improvement of cardio-respiratory function, if at least 1/7 of all skeletal muscles are activated, with last at least five minutes. Quality of life could be measured by a questionnaire including walking, somatic and mental symptoms. Muscle loss could lead to frailty: there is decline in the average muscle mass and performance associated with aging. Skeletal muscles regenerative capacity has been shown to decline with age. It is important especially in use of drugs in the elderly according to a lean body mass. Periodontal status is an opened problem in the elderly. Older persons often have poor oral health and frequent periodontal diseases. It is analyzed in nursing home residents in a coastal region of Croatia. The greatest number of teeth was registered in the fifth sextant. Following the excluded sextants, the most numerous were the sextants with visible deposits of dental calculus, and those with positive bleeding on probing. The

fourth part is dealing with questionable and unsolved therapeutic problems in the elderly. It starts with pharmacodynamics (the study of what the drug does to the body) and pharmacokinetics changes (the study of what the body does to the drug). Elderly population takes 20-30 per cent of drugs taken by total population. According to pharmacokinetics, all levels are changed from absorption to metabolism and elimination of drugs. Pharmacodynamics could be altered as a consequence of receptor binding, postreceptor effect, and chemical interactions. Radiation therapy in the elderly is special problem. It is possible to deliver curative doses of this therapy in older patients with compromising their general health and conserving the life quality in satisfactory manner by using different systems of assessment of overall patient performance. Older persons are sustained from trauma in combination with physiological orthopedic changes. Osteoarthritis, foot and ankle problems, and osteoporosis are the main orthogeriatric problems, and its prompt diagnosis, and optimal pre and postoperative care and rehabilitation estimating functional recovery are the ways of choice very often. A rehabilitation system using computer and additional hardware in a rehabilitation process of a human hand are forward steps in this field.

The fifth part is dealing with remote patient monitoring EMH (Ericsson Mobile Health) system for older, rural, distant, chronically ill population in the interior of Croatia: Sisak Moslavina County. EMH is adaptable and secure direct link system for primary care, that can reduce cost of health care in distant rural areas both for population and health care system. A model road traffic as a resource risk loss in elderly population in Croatia suggests that a comparative victimization analysis for Croatia for the period of 12 years showed increased mild injury to elderly drivers, and increased severe injury among elderly pedestrians, and these facts demand preventive actions. Anxiety disorders among elderly in general practice services in the interior of Croatia in two observational time showed the increased number of treated people with mental disorders in primary care. The great disparity between widespread use of primary health care and very small use of hospital care especially in elderly patients assist. Nurses who work in community are not sufficiently informed about the existence and formal structure of the bodies that deal with ethical questions in their institutions and wider community. Although a large number of participants estimate their adjustment to retirement as easy, their satisfaction with leisure time is very low. A better preparation is needed and a higher awareness of retirement as a period in which we can develop our personal potential through leisure, which should be filled with a higher level of activity.

At the moment in Croatia we are creating a postgraduate study with the title: Gerontology and Geriatrics, what is going to be a part of the new specialization of Geriatrics.