

Global Survey on Geriatrics in the Medical Curriculum

A collaborative study of WHO and the
International Federation of Medical Students'
Associations



**World Health Organization
Ageing and Life Course Programme**



World Health Organization
Noncommunicable Diseases and Mental Health Cluster
Prevention of Noncommunicable Disease and Health Promotion Department
Ageing and Life Course Unit

WHO and ageing

In response to the global challenges of population ageing, WHO launched a new programme on ageing and health in 1995 designed to advance the state of knowledge about health care in old age and gerontology through special training and research efforts, information dissemination and policy development.

The programme's perspectives focus on the following:

- approaching ageing as part of the life course rather than compartmentalizing health promotion and health care for older people;
- concentrating on the process of healthy ageing and the promotion of long-term health;
- respecting cultural contexts and influences;
- adopting community-based approaches by emphasizing the community as a key setting for interventions, taking into account that many health problems need to be dealt with outside the health sector;
- recognizing gender differences;
- strengthening intergenerational links;
- respecting and understanding ethical issues related to health and well-being in old age.

International Federation of Medical Students' Associations (IFMSA)

Our mission is to offer future physicians a comprehensive introduction to global health issues. Through our programming and opportunities, we develop culturally sensitive students of medicine, intent on influencing the transnational inequalities that shape the health of our planet.

- IFMSA Mission Statement

Through the past 51 years, nearly 600,000 students annually become active in the member organisations of IFMSA - currently representing 84 countries across six continents. Every year, over 6,000 students participate in the exchange programs of IFMSA, thousands more design projects, attend conferences, and plan events in such areas as public health, medical education, human rights, HIV-AIDS prevention, and international research.

Suggested citation:

Keller, I., Makipaa, A., Kalenscher, T., Kalache, A., *Global Survey on Geriatrics in the Medical Curriculum*, Geneva, World Health Organization, 2002

Acknowledgements

The study was coordinated by Ms. Ingrid Keller (Associated Professional Officer with WHO/ALC) under the supervision of Dr. Alexandre Kalache, Coordinator WHO/ALC. The study and the subsequent report were made possible through the commitment and collaboration of several people. Many thanks go to Mr. Arttu Makipaa (intern with WHO/ALC) for data analysis and report writing, Mr. Tobias Kalenscher (intern with WHO/ALC) for data collection, elaboration of coding methodology and coding, as well as to Mr. Nick Schneider (EMSA), Mr. Thiago Monaco (IFMSA) and Mr. Sanjeeb Sapkota (IFMSA) for assistance in data collection. Thank you very much also to Ms. Emilie Martinoni (Switzerland), Mr. Phillip Lamptey (Ghana) and Mr. Nikola Borojevic (Croatia) who have contributed the case studies from their countries, and to Mr. Mats Sundberg (IFMSA) and Mr. Michael Euler (IFMSA) for their collaboration in developing the questionnaires. Comments on earlier versions from Prof. Hana Hermanova (USA/Czech Republic) and Prof. Italo Savio (Uruguay) are gratefully acknowledged. Many thanks also go to Ms. Kristin Thompson for editing the document.

WHO and IFMSA would like to thank United Nations Population Fund (UNFPA, European Office, Geneva) for generously supporting the printing of this report.

The data collection would have been impossible without the support of all the National Focal Points in the participating countries. Our appreciation goes to:

Australia: Anh Nguyen, Joseph Doyle, Austria: Phillip Kolloros, Margit Atzmüller, Bosnia – Herzegovina: Mirza Muminovic, Brazil: Caio Roberto Shwafaty de Siqueira, Vanessa Pinheiro, Bulgaria: Dragomir Draganovic, Canada: Reham Amin, Chile: Carolina Barnett, Arturo Borzutzky, China, Hong Kong SAR: Lee Wing Cheong, Leung Lok Sum, Joy Jenny Chu and Dr Christina Maw, Colombia: Marcela Fandiño Cárdenas, Croatia: Nikola Borojevic, Czech Republic: Eva Matejckova, Denmark: Matthias Zaccarin Lauritzen, Dominican Republic: David Soriano, El Salvador: Jorge Castellanos, Rodrigo Alfaro, Estonia: Kersti Kloch, Finland: Tom Sundell, France: Marc Sabourin, Germany: Michael Euler, Florian Striehl, Georgia: Levan Lebauri, Ghana: Philip Lamptey, Greece: Michael Samarinas, Guatemala: Myriam de Ybarra, Hungary: Eva Suranyi, Iceland: Björg Thorsteinsdottir, India: Amarinder Singh Bindra, Nadini Bura, Indonesia: Hartatiek Nila Kamila, Gercelina Silaen, Israel: Yuval Bloch, Noam Frey, Gil Shlamovitz, Italy: Tranquillo Antoniozzi, Soraya Zaid, Jamaica: Lincoln Cox, Japan: Yoshitaka Oyama, Gen Shinozaki; Kenya: Benedict Maungu, Kuwait: Al-Dousari Abdulrahman, Latvia: Aksels Ribenis, Lebanon: Hesham Khalfan, Ahmad Halwani, Lithuania: Tomas Vasylius, The former Yugoslav Republic of Macedonia: Vijay Rawal, Igor Ilievski, Malaysia: Irfan Mohamad, Malta: David Elluc, Gianfranco Spiteri, Mexico: Prof Luis Miguel Gutierrez Robledo, Nepal: Sanjeeb Sapkota, Netherlands: Jacco Veldhuyzen, Susanne van der Velde, New Zealand: Kirsten Gaerty, Nigeria: Jude Chimdi Ohanelle, Norway: Hilde Risstad, Palestinian Authority: Anan Shtaya, Panama: Alfredo Molto, Paraguay: Tania Fleitas, Peru: David Chang, Philippines: Eugene Macalinga, Poland: Ewa Kurys, Portugal: João Cerqueira, Romania: Razvan Chereches, Dragomir Ovidiu, Rwanda: Richard Gakuba, Slovak Republic: Martin Caprnda; Jana Olearnikova, Marek Varga, Slovenia: Vesna Gorup, South Africa: Jenni Moore, Spain: Maria Jose Molina Estirado, Sudan: Hiba Omer, Sweden: Anna Meschaks, Switzerland: Emilie Martinoni, Tanzania: Godfrey Msemwa, Thailand: Sarawut Boonsuk, Sophon Lerdsirisophon, Chenchit Sangsirinakagul, Togo: Komi Ekpé Ahose, Tunisia: Zied Mhirsi, Turkey: Aydogan Orhan, Tomris Cesuroglu, Ukraine: Maksym Zagorodny, United Kingdom: Paul Burns, United States of America: Preeti Dalawari, Joel Kammermeyer, Uruguay: Mayinés López, Prof. Italo Savio, Venezuela: Jhon David Estaban, Jorge Prieto, Yugoslavia: Jelena Jankovic, Zimbabwe: Edgar Njolomole.

Table of Contents

Acknowledgements	III
Table of Contents	V
Introduction	1
Background	1
Rapid ageing in developing countries	2
The epidemiological transition	4
The challenge for health systems	5
The TeGeME study	6
Methodology	7
Participants	7
Limitation of the data	8
Coding	8
Types of analysis	8
Results	10
Data from national level	10
National regulations	10
Status of geriatric medicine in the national regulations	11
Data from local level	11
Data analysis	11
General characteristics of the medical schools analysed	13
Teaching facilities for geriatrics	13
Characteristics of geriatric education	14
Schools that do not teach geriatrics	15
GERIND set against the figures on ageing populations	16
Group A: “Old population – weak in geriatrics education” - countries	20
Group B: “Young population - weak in geriatrics education ” – countries	20
Group C: “Old population – strong in geriatrics education” – countries	21
Conclusions	21
Training in geriatric medicine versus proportion of older population	21
The existence of national regulations	22
Development differences	23
Conclusions and Future Recommendations	24
The International perspective from the view of IFMSA	24
The European perspective from the view of EMSA	26
WHO’s perspective	27
References	29
Annex I	30
Annex II	51

Introduction

Global population ageing is an important challenge and opportunity to be taken on by virtually all countries. Especially in less developed countries population ageing changes the nature of demands on health care systems, which will have to accommodate the needs of the older population as well as other care-needs– such as child and maternal care. Health care systems in developed countries will also have to adapt since their population will continue to age. In light of world-wide population ageing, it becomes clear that the education of tomorrow's medical doctors is important because they will increasingly deal with older patients. Thus, the basic principles of the special care-needs of older persons should not be of exclusive concern to specialists.

In an attempt to assess how geriatric medicine is being taught world-wide, the WHO Ageing and Life Course Programme (**ALC**) devised a study, the Teaching Geriatric in Medical Education study (TeGeME), and invited the International Federation of Medical Students' Associations (IFMSA) to be a close collaborator in the implementation. The study was initiated in December 1999 and has involved many IFMSA members as well as regional associations of medical students, especially the European Medical Students' Association (EMSA) and the Federation of Scientific Societies of Medical Students in Latin America (Federacion Latinoamericana de Sociedades Cientificas de Estudiantes de Medicina - FELSOCEM).

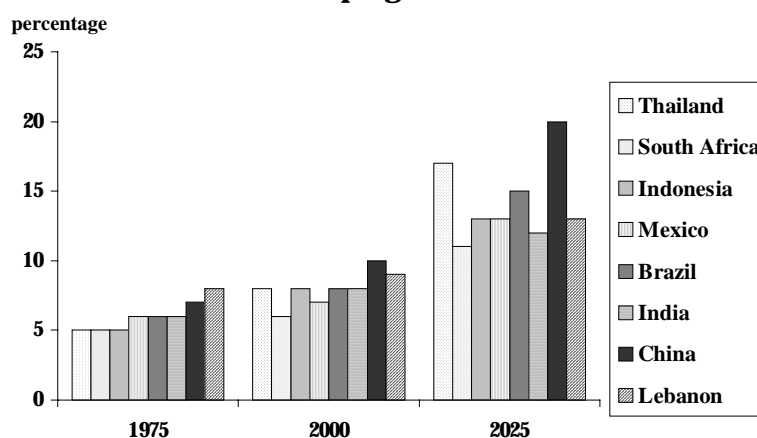
The main goal of the TeGeME study was to gain insight on if and how ageing issues are incorporated into the medical curriculum world-wide. WHO strongly advocates that all future medical doctors need to be well trained in care of older persons, since most future doctors will see increasing numbers of older persons in daily practice. Today's students need to acquire knowledge about how to treat older persons from an interdisciplinary point of view. WHO established a firm partnership with IFMSA with the ultimate aim of fostering the adoption of geriatric medicine in the medical curriculum world-wide.

Background

One of the main features of the world population over the last few decades has been rapid increase in the absolute and relative numbers of older people in both developing and developed countries. This trend will accelerate over the next two or three decades. The total number of older people (defined as 60 years of age and over) world-wide is expected to increase from 605 million in 2000 to 1.2 billion by the year 2025 (1). Currently, about 60% of older persons live in the developing world. This number is expected to increase to 75% (843 million) by the year 2025. Figure 1 shows the proportional increase of older persons among the total population for selected developing countries.

Figure 1

Percentage of People 60 years and over in selected Developing Countries



Source: (1)

In 2000, for the first time, there were more people aged 60 and older than children under 14 in a number of developed countries such as Germany, Japan and Spain (2). Population ageing could be compared to a silent revolution that will impact on all aspects of society. It is imperative that we prepare ourselves in the most appropriate way because both the opportunities and the challenges created by population ageing are abundant.

Rapid ageing in developing countries

In 1950 the average life expectancy at birth (LEB) in most of the developing world was around 40 years. By 2000 it had increased to 64 years and it is projected to reach 71 years by 2025 (1). With the exception of those Sub-Saharan countries, which have been hit hardest by the HIV/AIDS epidemics, the LEB has constantly increased in all developing countries over the last few decades. For example, in India LEB for both sexes increased from 53 years in 1975 to 64 years in 2000 and is expected to reach 72 years by 2025. Respective figures for Thailand are 61, 70 and 77 years and for Brazil 60, 68 and 74 years (1). Already over 40 countries in the developing world have a LEB of 70 years or over (1).

These rapid increases in LEB reflect sharp declines in mortality rates, particularly through the prevention and/or treatment of diseases associated with premature death. The advent of specific treatment for a range of infectious diseases (for example, tuberculosis, respiratory infections and gastroenteritis in childhood), in addition to immunization against many others (such as diphtheria, poliomyelitis and measles), contributed to the survival of millions of children to adulthood throughout the developing world within the last 50 years. These adults are now ageing. Furthermore, life expectancy of older adults in developing countries is not much smaller than that in the high-income countries. For instance, life expectancy at the age of 60 in Canada in 1996 was 24 years for women and 20 for men; respective figures in Mexico were 23 and 19. (3).

Obviously, for countries to age it is necessary that large proportions of their populations survive into old age. However, the speed of the process is even more influenced by what happens at the bottom of the age distribution, affecting the number of young individuals in the population. The recent trends in this respect have taken demographers by surprise: the

speed of decline of fertility rates since the 1970s in developing countries could not have been predicted during the 1970s. Once again, interventions based on medical technology were instrumental. The availability of modern contraceptive methods has made it possible to have sharp fertility rate declines in only a few years.

World-wide trends in life expectancy at birth and in fertility rates are summarized in Figures 2 and 3 (2). In both cases, the vast differential between developed and developing countries are rapidly decreasing.

Figure 2

Life Expectancy at Birth by World Regions

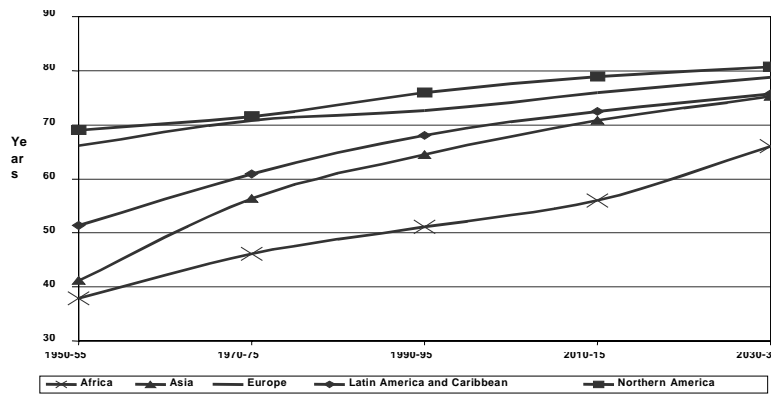
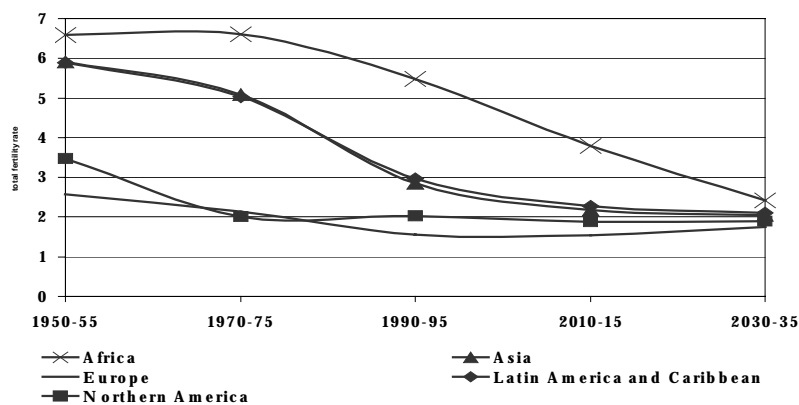


Figure 3

Total Fertility Rates by World Regions



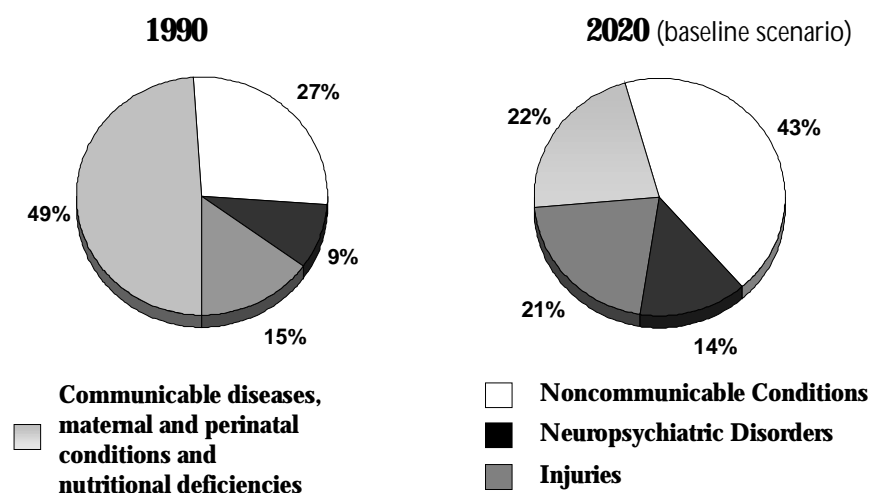
he combined effect of this shift from high to low mortality and from high to low fertility (commonly referred to as the *demographic transition*) is population ageing: fewer children enter the population while more individuals survive into old age.

The epidemiological transition

Population ageing will increasingly bring important challenges to health care policy makers. This is particularly so because of the changing pattern of diseases, translated into changing causes of death and morbidity - commonly referred to as the *epidemiological transition*. This term describes the increasing importance of disease and death attributable to non-communicable diseases (NCDs) happening simultaneously to a decrease in the importance of infectious diseases. While obviously welcome, the gradual shift away from infectious diseases towards NCDs poses a different sort of challenge for developing countries. According to WHO estimates, in 1990 about 50% of the burden of disease in developing countries was attributable to communicable diseases, around 40% to NCDs (including neuropsychiatric diseases) and the remaining share attributable to external causes (mostly injuries). By 2020 a very different picture will have emerged: NCDs and injuries are expected to be responsible for over three-quarters of the disease burden in developing countries and newly-industrialized countries (Figure 4).

Figure 4

Global Burden of Disease 1990 - 2020 by Disease Group in Developing Countries



Source: (4)

That is not to say, however, that infectious diseases will have disappeared in the foreseeable future. While they are expected to decrease in importance as a cause of morbidity, resources will continue to be required for both the treatment and the prevention of infectious diseases. At the same time NCDs will increase in both prevalence and cause of death in most of the developing countries.

Hence, the term *double burden of disease* has been used to reflect what will emerge as a dominant feature of public health within the next few decades in the majority of developing countries.

The challenge for health systems

The increasing proportions of older persons in the population leads to significant changes in the demands on health care systems. This is particularly important in countries where only incipient health insurance or social security systems exist. New and innovative plans for community health care and long term care for the aged are urgently required to counteract factors such as urbanization, changes in family structure and participation of women in the paid work force. Further, as health care systems in developing countries become increasingly challenged by the double burden of disease, the ensuing issues become particularly complex. Primary health care workers, in particular, will be required to be well-trained in prevention and treatment of NCDs. This training should embrace a multi-disciplinary perspective. Particular attention should be given to the special care-needs of older persons, reflecting the fact that they include medical conditions unique to this age group. For example, co-morbidity is diagnosed in the USA in more than 50% of older people (5) and severe walking disabilities are seen in approximately 10% of older individuals (6). Additionally, when choosing the dosage of medication for older patients, health care providers need to take the age of the patient into consideration as well as the risks of polypharmacy and iatrogenic disease (the result of a lack of appropriate consideration of side effects) (7). Further, cognitively impaired patients might fail to remember to take their medications, or take an inappropriate dosage. Some older patients may also be in special need for care of their emotional and spiritual well-being, in particular when loved ones, especially spouses, may have died.

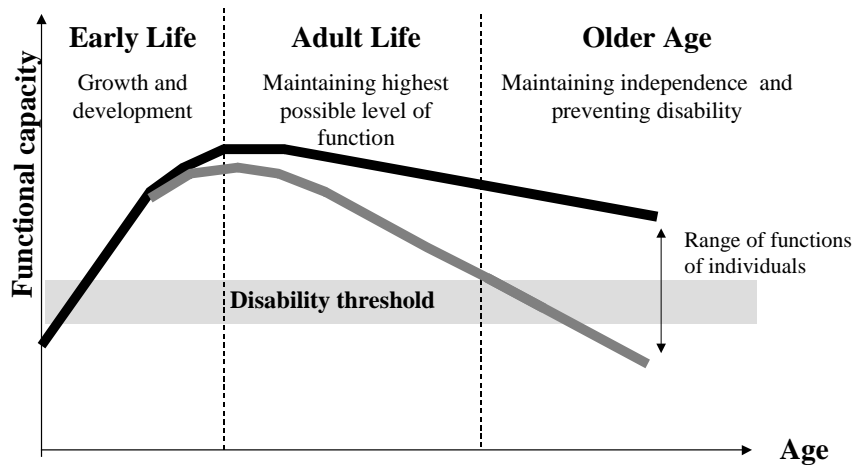
Having said that, there are at least 30 different "geriatric syndromes" including social, mental and physical problems which can only be well attended by specially trained health care providers. This includes nurses, doctors, social workers, caregivers and policy makers acting at all levels starting from primary health care to the specialized unit at a tertiary hospital, rehabilitation and long-term care facilities, as well as in the office of the local or national health care authorities. At present, only through well-designed educational programmes in geriatrics and gerontology can a well-planned infrastructure to support older people's care be developed.

For all the above reasons, the demand for knowledge of "older age care" will increase as the number of older persons increases throughout the world – in the developed countries which are continuing to age, and in the developing world which is ageing rapidly.

This will be particularly so if societies and individuals do not incite themselves to achieve health through the process of active ageing. In this respect, ALC has been actively promoting the concept of "active ageing", which is defined as: *the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age*. In addition, the life-course perspective has been central to ALC efforts to change the paradigm of health and ageing, as it is illustrated in Figure 5.

Figure 5

Functional Capacity over the Life Course



Source: (8)

Functional capacity (such as ventilatory capacity, muscular strength, and cardio-vascular output) increases in childhood and peaks in early adulthood, eventually followed by a decline. The rate of decline, however, is largely determined by factors related to adult lifestyle – such as smoking, alcohol consumption, levels of physical activity and diet. The gradient of decline may become so steep as to result in premature disability. However, the acceleration in decline may be influenced at any age through individual as well as policy measures. Smoking cessation and small increases in the level of physical fitness, for example, reduce the risk of developing coronary heart disease. Conditioning by social class also affects functional capacity -- poor education, poverty, and harmful living and working conditions all make reduced functional capacity more likely in later life. For those who become disabled, provision of rehabilitation, adaptations of the physical environment and specific interventions e.g. cataract surgery, can greatly reduce the level of disability. Quality of life should be a major consideration throughout the life course. Changes in living environment can vastly improve quality of life. Gains are obtained by supporting the 'care unit' – in most case the family and close friends. Through appropriate environmental changes such as adequate public transport in urban environments, lifts, ramps, and adaptations in the home – the disability threshold can be lowered. Such changes can ensure a more independent life well into very old age.

The TeGeME study

ALC strongly believes in medical students as agents of change and natural leaders in reforming medical education. Taking this into consideration, and prompted by the speed at which the global population is ageing, WHO and IFMSA joined efforts and launched a study aimed at assessing the existing teaching practises in geriatric medicine around the world: the Teaching Geriatrics in Medical Education (TeGeME) study.

Methodology

Two questionnaires were created by a joint WHO/IFMSA committee, which was set up in winter 1999. One, the national questionnaire, includes general questions about medical education and about the inclusion of geriatric medicine in the national curriculum/objectives (if existent) in the country of the person filling in the questionnaire. The second questionnaire, the local questionnaire, assesses training in geriatric medicine offered at the medical school level.

During an IFMSA conference in Kuopio, Finland, in March 2000, the questionnaires were presented to a group of about 25 medical students coming from all continents. The students discussed the questionnaires in small groups and revisions were made subsequently. Both questionnaires were initially written in English and afterwards were translated into French and Spanish by the WHO translation department, and into Portuguese and Japanese by IFMSA. Both questionnaires are available from ALC upon request.

The study was carried out through an e-mail survey. Participating countries named a person to be the National Focal Point (NFP) for the TeGeME study. In each country there was always one NFP - the main national collaborator who became the liaison person for WHO. The NFP was responsible for the co-ordination, organisation and supervision of all TeGeME-activities within the country. Each NFP received the two questionnaires from ALC. They were then asked to independently gather the necessary information and complete the national questionnaire. Their further task was to find and recruit local representatives at every medical school of their country. Those local representatives are referred to as Local Focal Points (LFP). It was the NFP's duty to send them the local questionnaire and re-collect it after completion. In addition, the NFPs answered any enquiries and made sure the LFPs met the deadlines. The NFP coded the local data and sent local and national data back to ALC.

Participants

National level data were collected from 72 countries representing all the continents¹. At the university level, the NFPs attempted to acquire data from all medical schools in those 72 countries for which national data were received. However, the variability in the degree of participation was high. It proved especially difficult to obtain data from all medical schools in countries, which had a high number of them (like Brazil, Japan, USA). In some countries, the relative number of reporting medical schools was too small to allow a valid, representative statement; hence these countries were not included in the analysis of data received from medical schools. Altogether, data from a total of 268 universities in 64 countries were collected. To allow for representative interpretation, only countries with an overall participation of more than or equal to 50% of all medical schools, from whom completely filled questionnaires were obtained, were included in the further analysis. Altogether, the revised data used for further analysis consisted of figures from 36 countries and 161 schools (out of a total of 206 medical schools in these 36 countries).

¹EUROPE: Austria, Bulgaria, Bosnia-Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Iceland, Israel, Latvia, Malta, The Former Yugoslav Republic (FYR) of Macedonia, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Ukraine, Yugoslavia, France, Georgia, Hungary, Italy, Romania, Russia, Slovenia, Turkey, UK
AMERICAS: Brazil, Canada, Chile, Dominican Republic, El Salvador, Guatemala, Jamaica, Mexico, Panama, Paraguay, Peru, Uruguay, USA, Venezuela

AFRICA: Egypt, Ghana, Kenya, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Togo, Tunisia, Zimbabwe,

EASTERN MEDITERRANEAN AND ASIA PACIFIC: Australia, China, Hong Kong, Special Administrative Region (SAR), India, Indonesia, Japan, Kuwait, Lebanon, Malaysia, Nepal, New Zealand, Palestinian Authority, Thailand

A complete list of all participating countries and the number of schools per country is provided in Table 1. All countries that are included in the analysis of data from the medical schools are printed in **bold**.

Limitation of the data

Medical students reported all data collected in this report. They collected the information about their medical schools with the support of faculty members, publications of the medical school, or according to information given by other students. In many countries not all of the schools participated, thus data presented can give a “snapshot” only, and should not be interpreted as representative for schools not surveyed.

Coding

All national questionnaires were coded by ALC in MS Excel and analysed in MS Excel and SPSS. NFPs were, however, invited to code the local questionnaires on their own, using an MS Excel matrix provided by ALC, and then return the completed matrix to ALC. They were supplied with detailed coding-guidelines in a codebook that guided the reader step-by-step through every question of the local questionnaire and gave precise instructions on how to code the individual answers. Coding the questionnaires involved transferring the information given in the questionnaires into three types of variables: number variables, text variables and categorical variables. Although asked to code the local questionnaires on their own, many NFPs lacked access to the necessary computer facilities and sent the unprocessed local questionnaires back to ALC for coding.

For the purpose of data analysis, the data were classified into geographic categories and/or economic categories according to World Bank classification². Most of the further analysis was carried out with regard to economic or geographic classification.

Types of analysis

1. An individual analysis was made for every school with the objective of obtaining an appropriate picture of the status of education in geriatrics at that school. The data for the schools were then summarized per country.
2. A group analysis was made in order to see differences between geographic regions or between countries of differing development-status. Here, different parts of the questionnaire were analysed separately throughout all schools.

² High-income countries are determined according to the World Bank classification. The economies in transition and the “other countries” contain every country in “Middle income economies” and lower, with the additional distinction that Eastern European Economies make up their own group to stress their transitional status. Yugoslavia and FYR Macedonia were however left with the “other countries” due to their early stage of transition.

Table 1: Number of participating medical schools and number of medical schools per country

Country	No of participating schools/No of Schools per Country (Coverage %)	Country	No of participating schools/No of Schools per Country (Coverage %)
Austria	3/3 (3%)	Lithuania	2/2 (100%)
Bosnia/Herzegovina	1/ 4 (25%)	FYR Macedonia	1/1 (100%)
Brazil	7/90 (8%)	Malaysia	2/6 (33%)
Bulgaria	3/5 (60%)	Malta	1/1 (100%)
Canada	10/16 (63%)	Netherlands	4/8 (50%)
Chile	1/10 (10%)	New Zealand	4/4 (100%)
China,Hong Kong SAR	2/2 (2%)	Nigeria	2/22 (9%)
Colombia ³	2/26 (8%)	Norway	2/4 (50%)
Croatia	4/4 (100%)	Palestinian Authority	1/1 (100%)
Czech Republic	7/7 (100%)	Panama	3/3 (100%)
Denmark	3/3 (100%)	Peru	1/25 (4%)
Dominican Republic	1/6 (17%)	Poland	7/12 (58%)
El Salvador	3/6 (50%)	Portugal	5/7 (71%)
Estonia	1/1 (100%)	Romania	2/10 (20%)
Finland	5/5 (100%)	Russia	1/53 (2%)
France	6/45 (13%)	Slovak Republic	2/3 (67%)
Georgia	1/ 2 (50%)	South Africa	4/8 (50%)
Germany	21/39 (54%)	Spain	15/24 (63%)
Ghana	3/3 (100%)	Sudan	1/11 (9%)
Greece	7/7 (100%)	Sweden	4/6 (67%)
Guatemala	2/ 2 (100%)	Switzerland	5/5 (100%)
Iceland	1/1 (100%)	Tanzania	1/ 4 (25%)
India	1/140 (1%)	Thailand	5/13 (38%)
Indonesia	7/32 (22%)	Tunisia	1/ 4 (25%)
Israel	4/4 (100%)	Turkey	11/41 (27%)
Italy	3/35 (9%)	UK	7/23 (30%)
Jamaica	1/1 (100%)	Ukraine	14/15 (93%)
Japan	26/80 (33%)	Uruguay	1/1 (100%)
Kenya	1/ 2 (50%)	USA	4/125 (3%)
Kuwait	1/1 (100%)	Venezuela	4/12 (33%)
Latvia	1/1 (100%)	Yugoslavia	5/5 (100%)
Lebanon	4/4 (100%)	Zimbabwe	1/ 2 (50%)

In addition, the following countries sent data from national level only: Australia, Egypt, Hungary, Mexico, Paraguay, Slovenia, Rwanda and Togo.

³ National data from Colombia were not received and local data did not amount to 50%, thus it was not included in further analysis.

Results

Data from national level

Data were gathered for 72 countries using the national level questionnaire. From these data, general information was acquired about medical education in the participating countries.

National regulations

An assessment was made of whether countries have a national curriculum or national objectives for medical education, or if the individual medical school designs the curriculum independently. Figure 6 shows the global results.

Figure 6

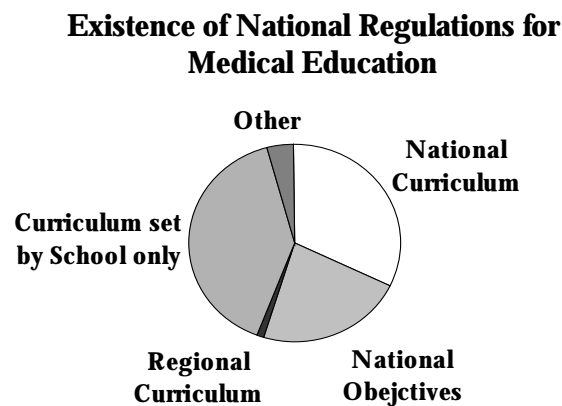
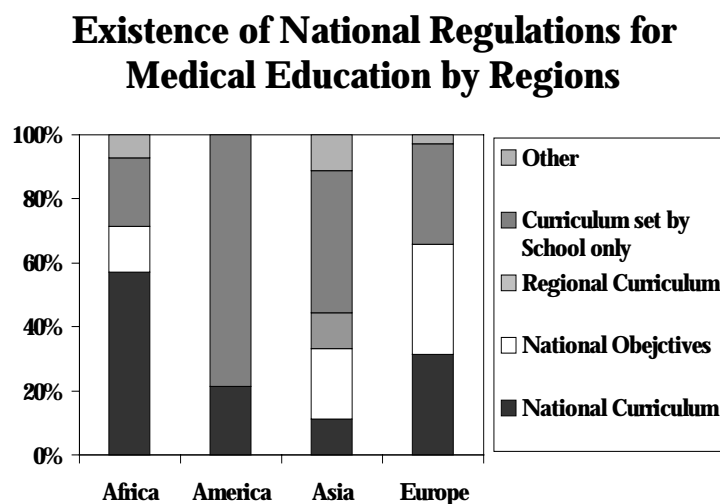


Figure 7 shows the same results by world regions.

Figure 7



About half of all countries assessed (53%) have national regulations for medical school curricula. Countries in the Americas are less likely to have a national curriculum. There, the medical schools decide the curriculum for the most part (79%), whereas in Africa 73% of the countries, and more than 50% of the countries in Europe, have a national curriculum or national objectives. In Asia no clear trend could be detected.

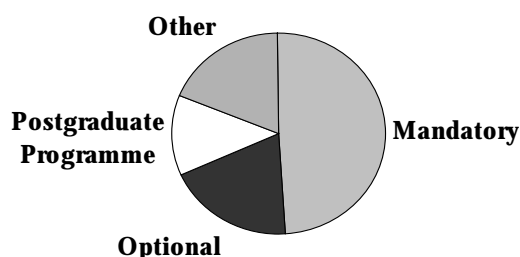
Further, about half of all countries apply rules about the length of medical studies on a national level. Among countries, which have national regulations, 95% apply rules about the length of medical studies.

Status of geriatric medicine in the national regulations

Looking exclusively at countries with national regulations, it was found that in 41% the curricula mention geriatrics in some way (63% of which is in Europe, 31% in Africa and Jamaica). The status of training in geriatric medicine is visualised in Figure 8.

Figure 8

Status of Geriatric Medicine in National Curricula



In about half of the countries geriatrics is mandatory. "Other" stands for "not specified" or in the case of Slovenia, for example, it was reported that "geriatric issues are divided and various directions of geriatric medicine are taught at various departments of medical schools".

Only a few of these countries apply rules in teaching geriatrics regarding "term of teaching" (10%), "hours of teaching" (8%), or "content of teaching" (5%). About one-third of the countries with national curricula/objectives which do not mention geriatric medicine have reported the intention to include it in the future.

Data from local level

Data analysis

For the 36 participating countries and a total of 161 schools an in-depth analysis was performed in MS Excel and SPSS. Annex II lists all participating schools. After the analysis (winter 2001) the results were presented to all NFPs who were asked for verification.

Distinctions were made according to the World Bank classification of "high-income countries", "economies in transition" and "other countries":

High-income countries	Economies in transition	All other countries
Austria, Canada, Denmark, Finland, Germany, Greece, China – Hong Kong SAR, Iceland, Israel, Malta, Kuwait, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland	Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovak Republic, Ukraine	El Salvador, Ghana, Guatemala, Jamaica, Lebanon, FYR Macedonia, Palestinian Authority, Panama, Uruguay, Yugoslavia

In summary, assessment was made of:

- The training offered in geriatric medicine and the facilities for this training;
- The characteristics of this training; and
- The contents related to ageing in the general curriculum.

The following aspects were taken into account to evaluate the education in geriatric medicine in each school:

1. Existence of independent units for geriatric medicine in the faculty, or geriatric wards at the (university) hospital, and if not;
2. Existence of sub-units or sub-wards, and if not;
3. Any other facility providing training in geriatric medicine;
4. The set-up and contents of classes in geriatric medicine;
5. Aspects of ageing taught in any other class/subject⁴;
6. Geriatric medicine (if offered) being a mandatory subject or an elective;
7. If geriatrics is not taught, intention to include it.

To facilitate the analysis and to be able to compare the situation of geriatric teaching between the participating countries, the index "GERIND" was constructed. The guiding questions behind this indicator are: "*How much about geriatric medicine are students learning in a particular country on the average?*" and "*How is geriatric medicine valued in the school?*" GERIND contains several input variables, qualitative and quantitative in nature. It is an endogenous output-indicator on the scale of 0-100 (100 = maximum). The criteria to elaborate GERIND are outlined below, with only one value per school possible.

In the analysis the GERIND score (in points) was calculated per school, as well as the national average GERIND score, weighing every school by the number of students. It is particularly important to consider the number of students enrolled at each school, because significant differences exist in the sizes of schools within a country. By weighing the schools in this way, we avoid distortions in the school-specific GERIND values when being summarized in one national GERIND.

The GERIND offers many quantitative and qualitative characteristics in one number, thus comparisons between countries are possible and GERIND can be set against other determinants. In this analysis GERIND is set against the percentage of people older than 60 years of age in each country, comparing estimations for 2000 and 2025 respectively.⁵ To facilitate the comprehension of the analysis visually, the two variables were plotted in scatter diagrams (Plots 1-3).

⁴ Aspects of ageing specified in the LFP questionnaire: anatomical, biochemical, physiological, surgical, general clinical, gynaecological, paediatric, social/preventative and/or public health, pharmacological, psychiatric/psychological, neurological, pathological aspects of ageing (several answers possible).

⁵ Source: (1)

QUANTITATIVE CRITERIA:

If the school has	
Independent unit AND independent ward:	60 points or
Independent Unit OR independent ward	30 points or
Sub-unit AND sub-ward	40 points and/or
Sub-unit OR sub-ward	20 points or
Unit and sub-ward	50 points or
Ward and sub-unit	50 points or
Other form of teaching (yes)	10 points and/or
Intention to include it in the future (yes)	10 points

SUBMAXIMUM 60 points

QUALITATIVE CRITERIA:

Aspects of ageing taught and contents of classes*	20 points (maximum)
Geriatrics being mandatory, if yes	15 points
Life Course perspective covered**	5 points

MAXIMUM 100 points

* The number of different aspects of ageing reported (included options in the questionnaire were: anatomical, biochemical, general clinical, gynaecological, neurological, paediatric, pathological, pharmacological, physiological, social preventative/public health and surgical aspects) that are taught during medical studies, independently of any training in geriatric medicine. Additionally, the contents of classes in geriatric medicine were assessed. The following possibilities were given in the questionnaire: physiology, neurology, pathology, socio-psychological aspects, health care services and ethical issues of old age. These criteria were introduced so that any form of teaching about ageing, would be considered.

** The life course perspective considers ageing over the whole life span, from birth to death, as opposed to the focus on the "older person" or "the elderly" only. For example: in a paediatrics class it would be mentioned that low birth weight can negatively affect the health of a person in older ages.

General characteristics of the medical schools analysed

In countries with economies in transition, 85% of the schools have a conservative curriculum (discipline based). In the high-income and "other countries," half of all schools have a conservative curriculum, about one-fourth have an integrated curriculum (teaching blocks) and one-fourth have a problem-based curriculum (system/organ based) each. When we consider the ratio of female to male students in the participating countries, on average 52% of all students are female. In high-income countries, the female proportion is 57%, in the economies in transition 56%, and in the "other countries" 46%.

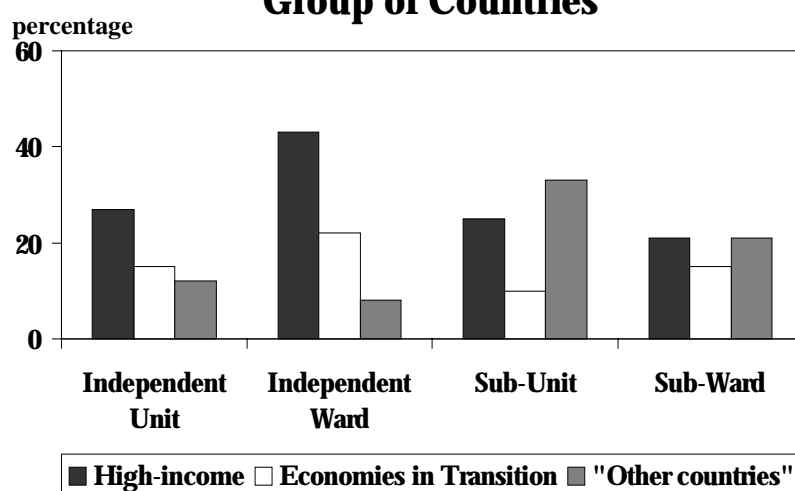
Teaching facilities for geriatrics

The question of whether a school teaches geriatrics or not was approached both quantitatively and qualitatively. As a first indication, the existence of an independent geriatric unit in the faculty, or a geriatric ward at the (university) hospital was considered. If none were there, the existence of sub-units or sub-wards was considered, and finally any other facility, which could provide training in geriatrics, was considered.

An independent unit for geriatric medicine in the medical faculty exists in 24% of all the participating schools, in 38% of the schools in the high-income countries, in 15% of the schools in economies in transition, and in 12.5 % of schools in the "other countries." An independent ward at the hospital exists in 39% of all the participating schools, in 43% of schools in the high-income countries, in 22% of schools in economies in transition and 8% of schools in the "other countries." A sub-unit exists in 23% of all the participating schools, in 25% of schools in the high-income countries, in 33% of schools in the "other countries," and in 10% of the schools in economies in transition. In 64% of all these schools the sub-unit is under internal medicine, in 33% under general medicine. A sub-ward was reported in 21% of all the participating schools, in 21% of schools in the high-income countries, in 15% of schools in the economies in transition, and in 21% of schools in the "other countries." In 81% of these schools, the sub-ward is hosted by internal medicine and in 24% by general medicine⁶. These numbers are depicted in Figure 9.

Figure 9

Existence of Geriatric Facilities by Group of Countries



While a substantial number of high-income countries report diverse facilities to teach geriatric medicine, this is less the case for economies in transition and "other countries." Nevertheless, that is not a complete picture, since there are other ways of teaching geriatric medicine even when no specialized ward or unit exists. For example, in 19% of the schools in economies in transition geriatrics is being taught though another subject, e.g. in connection with psychiatry, physiology, ethics, and other subjects.

Characteristics of geriatric education

Thirty-eight percent of participating schools in the high-income countries offer post-graduate studies in geriatric medicine, but only 7.5% of schools in economies in transition offer post-graduate studies in geriatric medicine, and none of the participating schools in the "other countries" offer this.

⁶ Some medical schools reported more than one sub-ward or -unit.

A life course perspective is included in the training in 22% of all the participating schools, again mostly in the high-income countries, not so much in the economies in transition, and very little in "other countries" (30-15-8% respectively)⁷. The most usual duration of a geriatric medicine course is 20-40 hours. About every fifth school in the high-income countries and in economies in transition offers practical courses on the ward, but many fewer schools offer this in "other countries" (25-20-4% respectively). Interaction with other health personnel during classes in geriatrics is common in the high-income countries and in economies in transition, 46% and 33% respectively, but much less common in the "other countries" (12%). Where there is interaction, it is mostly exercised with:

- nurses in 74% of all participating schools (in 75-77-66% of schools in the high-income countries, economies in transition, and "other countries" respectively)
- clinical gerontologists in 55% of all participating schools (55-62-66%)
- social workers in 54% of all participating schools (53-54-34%)
- psychiatrists in 43% of all participating schools (42-46-66%)
- dieticians in 40% of all participating schools (40-38-66%)
- volunteers in 22% of all participating schools (24-15-34%)

Finally, when we consider the teaching of aspects of ageing independently from classes in geriatric medicine, physiological aspects are most often reported to be taught (reported by more than 80% of the schools in the high-income countries and the economies in transition). Seventy percent of countries in these two groups report that they teach the psychiatric, pharmacological and pathological aspects of ageing in non-geriatrics classes. Neurological and general clinical aspects seem to be more frequently included in the high-income countries, whereas in economies in transition gynaecological, biochemical and anatomic aspects of ageing are often covered. In the group of "other countries" pathological, psychiatric and general clinical aspects of ageing are instructed in over half of the schools, while instruction in other aspects of ageing are less frequently reported. Surgical and paediatric aspects are the least taught aspects of ageing in every group of countries.

Schools that do not teach geriatrics

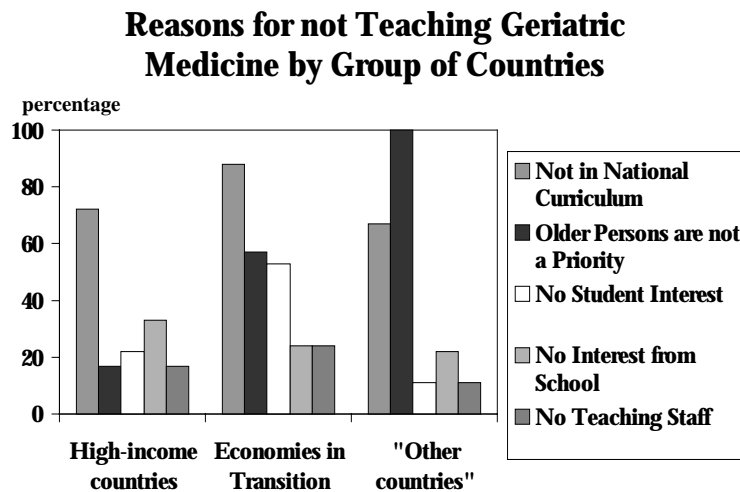
27% of all the participating schools do not report any training in geriatric medicine at all. This is the case in 19% of all schools in high-income countries, 43% of all schools in the economies in transition, and 38% of all schools in the "other countries." The reasons given for not teaching geriatric medicine are varied and sometimes multiple.

The most often cited reason is that geriatrics is not in the national curriculum: reported by 77% of all the participating schools in which geriatrics is not taught, 72% in the high-income countries, 88% in economies in transition, and 67% in the "other countries." Another reason, that "*Older people are not a priority issue*" is cited by 50% of all these schools, with 57% in the economies in transition and in all of the "other countries", but only 17% in the high-income countries. In 32% of all cases, lack of interest by students is the reason reported for not teaching geriatrics; 11% in "other countries," 53% in the economies in transition, and 22% in high-income countries. Lack of interest from the medical school was reported in 27% of the total cases, with 33% in high-income countries, 24% in the economies in transition, and 22% in "other countries." Some 18% of all the schools mention that there is no staff who can teach geriatrics, and this reason is given by 17% of schools in high-

⁷ Parenthesis indicate proportions in high-income countries--economies in transition--"other countries".

income countries, 24% of schools in the economies in transition, and 11% of schools in the “other countries.” The data are summarized in Figure 10.

Figure 10



In conclusion, for schools in high-income countries and in economies in transition the most important reason for not teaching geriatric medicine is that it is not mentioned in the national curriculum. In the “other countries”, however, it is a question of priority and interest. One might argue that it is rather a structural problem in economies in transition and a question of advocacy and awareness-raising in the “other countries.” In spite of this, among the schools where it is not currently being taught, the greatest intention to include geriatrics in the curriculum is in “other countries” with 13% of the schools, compared to 7% in the high-income countries, and 6% in economies in transition.

GERIND set against the figures on ageing populations

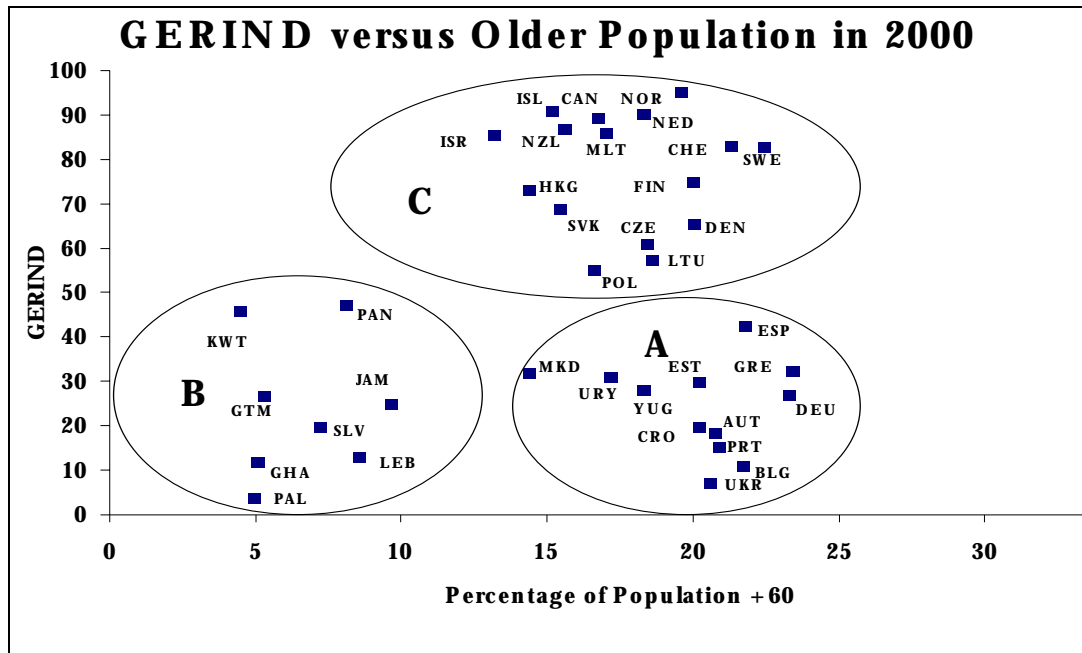
In the following table, the GERIND-index is set against the percentage of population over 60 years of age in the year 2000 and in the year 2025 in every country analysed, in order to detect any possible correlation. The causality between the analysed variables is not self-evident, nor is it necessarily intuitively trustworthy. The same goes for the assumptions in the model that might seem arbitrary at first glance. But the explanatory variable GERIND has been designed in an appropriate way, weighing certain inputs, qualitative and quantitative aspects, including the numbers of students in the particular schools. This way the model can also take into account the size of the school. Furthermore, it is not the purpose of this model to be statistically sound and resistant to any form of critique. It is clear that summarizing 36 countries with a highly divergent number of medical schools and students, using the same assumptions for them all, distorts and skews the picture. The aim is to illustrate rapid population ageing set against an operationalized quality and quantity of geriatric education. This should represent the preparedness of future medical doctors to adequately treat their greater and greater number of older patients. The speed of population ageing is different around the world. Thus, countries with fast ageing-rates and/or an already much older population than others should adequately train their medical doctors to care for higher, and constantly growing, numbers of older people. Table 2 gives an overview of the GERIND-index versus population data.

Table 2: GERIND – index value and percentage of population over 60 years of age by 2000 and projected for 2025 for analysed countries

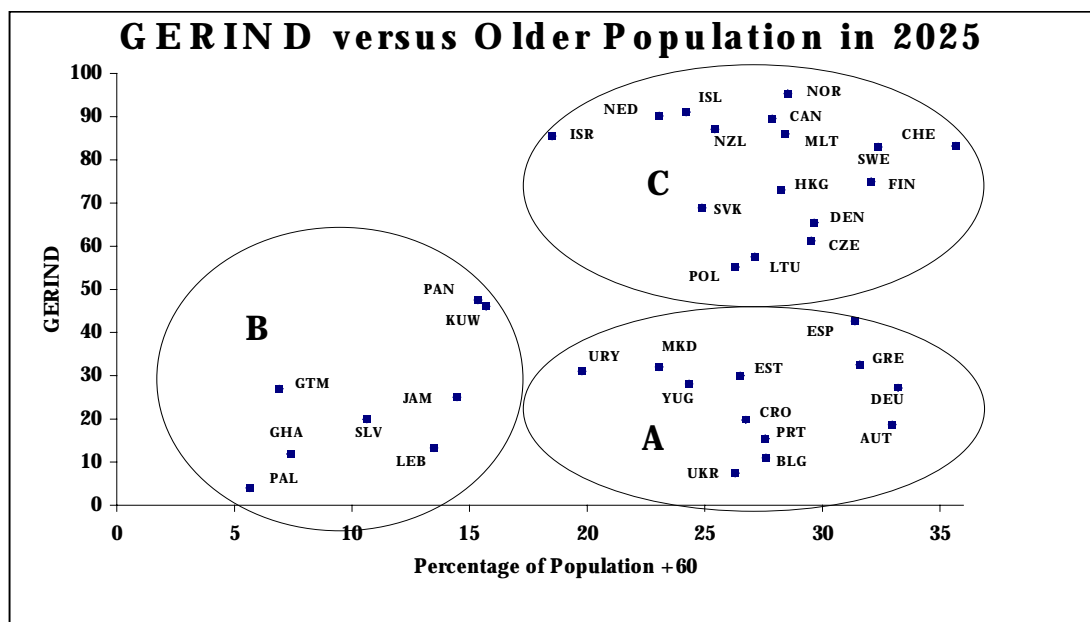
N	Country	GERIND	% older persons in 2000	% older persons in 2025
1	Norway	95.4	20%	29%
2	Iceland	91.0	15%	24%
3	Netherlands	90.2	18%	23%
4	Canada	89.5	17%	28%
5	New Zealand	87.0	16%	25%
6	Malta	86.0	17%	28%
7	Israel	85.5	13%	19%
8	Switzerland	83.2	21%	36%
9	Sweden	83.0	22%	32%
10	Finland	75.0	20%	32%
11	China, Hong Kong SAR	73.0	14%	28%
12	Slovakia	68.9	15%	25%
13	Denmark	65.4	20%	30%
14	Czech Republic	61.2	18%	30%
15	Lithuania	57.5	19%	27%
16	Poland	55.2	17%	26%
17	Panama	47.5	8%	15%
18	Kuwait	46.0	4%	16%
19	Spain	42.6	22%	31%
20	Greece	32.5	23%	32%
21	Macedonia	32.0	14%	23%
22	Uruguay	31.0	17%	20%
23	Estonia	30.0	20%	27%
24	Yugoslavia	28.1	18%	24%
25	Germany	27.2	23%	33%
26	Guatemala	27.0	5%	7%
27	Austria	26.7	21%	33%
28	Jamaica	25.0	10%	14%
29	El Salvador	19.9	7%	11%
30	Croatia	19.7	20%	27%
31	Portugal	15.4	21%	28%
32	Lebanon	13.3	9%	13%
33	Ghana	11.9	5%	7%
34	Bulgaria	11.0	22%	28%
35	Ukraine	7.4	21%	26%
36	Palestine	4.0	5%	6%

On a scatter plot, GERIND set against the ageing figures in 2000, and 2025, the following picture⁸ emerges.

Plot 1



Plot 2:



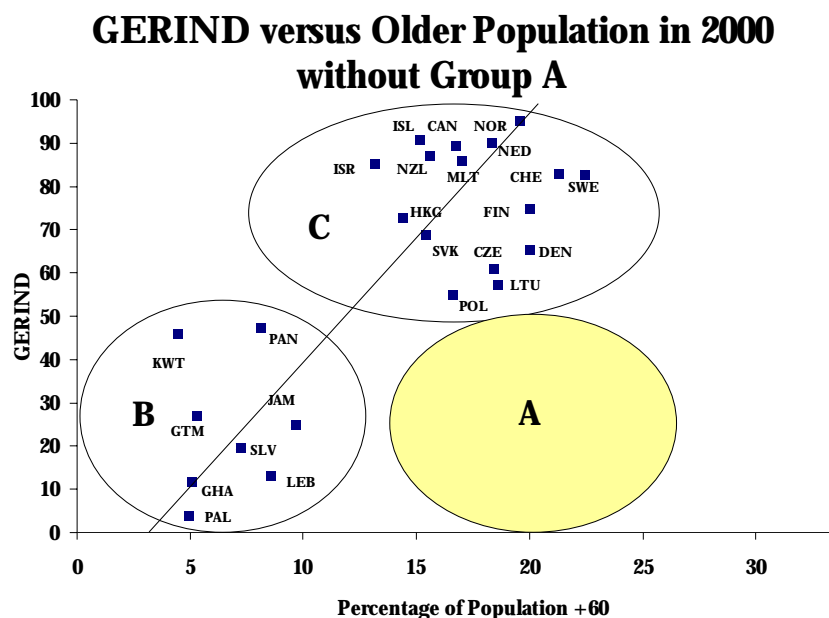
As can be seen in the data for 2025, rapid population ageing world-wide is predicted. The necessary assumption in the second plot is that GERIND would remain constant during this time period, which should be unrealistic. This results in a horizontal shift of the data to the right, a reiteration of the demographic change.

⁸ The country codes are the official ISO 3166-1 three letter country codes from e.g. UN statistics Division under <http://www.un.org/Depts/unsd/methods/m49alpha.htm> (assessed in October 2001), see also Annex II

One can observe that it seems that countries with a relatively young population have not perceived a “need” to train future medical doctors in geriatrics since older persons currently account for only a small proportion of the population. On the other hand, countries with a higher percentage of older persons are more likely to teach geriatric medicine. Can this hypothesis be strengthened?

If the countries of Group A are deleted from the plot, it is possible to see a trend under certain conditions. Even though some data had to be left out for this trend to become visible, this plot seems to better support the hypothesis formulated above: a number of countries gathered on the upper-right hand side are offering education in geriatric medicine and have a high percentage of older population. The other group of countries on the bottom-left hand side characterises a lower percentage of older persons among the general population and geriatric medicine is taught to a much lesser extent. The R2 is 0.557, a fairly good value keeping in mind the cross-country comparison nature of the model. The coefficient of the bi-variate regression divided by the standard error (t-statistics value) is 5.492 ($p < 0.01$), which makes the correlation significantly different from zero.

Plot 3



This hypothesis works for 70% of the analysed countries in the model, which increases the credibility. Conversely, if the other 30% are taken into account to complete the model, the correlation is distorted. These countries in Group A are characterized by a relatively high proportion of older persons among the total population, yet education in geriatric medicine is not generally established.

In the following tables, the data have been sorted by GERIND-index from high to low. The 4th column of each table shows the standard deviation (STDEV) of the GERIND. In the case of countries with only one medical school, the STDEV is 0, which is indicated with a “-”. The STDEV points out differences in geriatric education within a country.

Group A: “Old population – weak in geriatrics education” - countries

All countries in this group are European except Uruguay. Six out of these twelve countries are Eastern European economies in transition, then Southern Europe, and the largest part of German speaking Europe.

Table 3: GERIND-index and standard deviation of Group A, percentage of population over 60 years of age by 2000 and 2025 for analysed countries and percentage increase of older population between 2000 and 2025

N	Country	GERIND	STDEV	% older persons in 2000	% older persons in 2025	% increase in older population 2000 - 2025
1	Spain	42.6	24.7	22%	31%	44%
2	Greece	32.5	29.6	23%	32%	35%
3	FYRMacedonia	32.0	-	14%	23%	60%
4	Uruguay	31.0	-	17%	20%	15%
5	Estonia	30.0	-	20%	27%	31%
6	Yugoslavia	28.1	21.3	18%	24%	33%
7	Germany	27.2	19.7	23%	33%	43%
8	Austria	26.7	23.5	21%	33%	59%
9	Croatia	19.7	12.4	20%	27%	33%
10	Portugal	15.4	13.0	21%	28%	32%
11	Bulgaria	11.0	0.0	22%	28%	27%
12	Ukraine	7.4	1.5	21%	26%	28%
	AVERAGE	25.3	12.1	20%	28%	37%

Group B: “Young population - weak in geriatrics education ” – countries

Table 4: GERIND-index and standard deviation of Group B, percentage of population over 60 years of age by 2000 and 2025 for analysed countries and percentage increase of older population between 2000 and 2025

N	Country	GERIND	STDEV	% older persons in 2000	% older persons in 2025	% increase in older population 2000 - 2025
1	Panama	47.5	35.7	8%	15%	90%
2	Kuwait	46.0	-	4%	16%	300%
3	Guatemala	27.0	1.4	5%	7%	31%
4	Jamaica	25.0	-	10%	14%	50%
5	El Salvador	19.9	5.5	7%	11%	48%
6	Lebanon	13.3	26.4	9%	13%	58%
7	Ghana	11.9	2.1	5%	7%	46%
8	Palestinian Authority	4.0	-	5%	6%	15%
	AVERAGE	24.3	8.9	7%	11%	74%

All countries/territories in this Group B have a relatively “young” population and geriatrics is often not being taught.

Group C: “Old population – strong in geriatrics education” – countries

The last group of countries can be described as having a large population segment being 60 years of age and over (20% or more of the total population in 2000) as well as a relatively high GERIND. It might be hypothesised that these countries, in comparison to the others examined, might be better prepared to provide adequate health care to their older population.

Table 5: GERIND-index and standard deviation of Group C, percentage of population over 60 years of age by 2000 and 2025 for analysed countries and percentage increase of older population between 2000 and 2025

N	Country	GERIND	STDEV	% older persons in 2000	% older persons in 2025	% increase in older population 2000 - 2025
1	Norway	95.4	0.7	20%	29%	46%
2	Iceland	91.0	-	15%	24%	60%
3	Netherlands	90.2	3.1	18%	23%	26%
4	Canada	89.5	6.7	17%	28%	67%
5	New Zealand	87.0	25.8	16%	25%	63%
6	Malta	86.0	-	17%	28%	67%
7	Israel	85.5	13.1	13%	19%	41%
8	Switzerland	83.2	24.7	21%	36%	67%
9	Sweden	83.0	4.3	22%	32%	45%
10	Finland	75.0	18.9	20%	32%	61%
11	China,HongKongSAR	73.0	8.5	14%	28%	97%
12	Slovak Republic	68.9	24.0	15%	25%	61%
13	Denmark	65.4	21.5	20%	30%	48%
14	Czech Republic	61.2	22.8	18%	30%	61%
15	Lithuania	57.5	58.7	19%	27%	46%
16	Poland	55.2	27.2	17%	26%	59%
	AVERAGE	77.9	16.3	18%	28%	57%

Conclusions

Training in geriatric medicine versus proportion of older population

Table 6 summarizes the results for average GERIND values and proportions of older persons for all three groups of countries.

Table 6: Summary results for the three groups of countries

	GERIND	STDEV	% older persons in 2000	% older persons in 2025	% increase in older population 2000 - 2025
GROUP A					
AVERAGE	25.3	12.1	20%	28%	37%
GROUP B					
AVERAGE	23.9	11.3	7 %	12%	76%
GROUP C					
AVERAGE	77.9	16.3	18%	28%	57%

For the Group A countries "High proportion of older population – uncertain/insufficient training levels of geriatric medicine," it seems that the health care systems might face a major challenge in old age care since the training presently provided to future medical doctors does not seem to be sufficient. These countries presently (2000) have a percentage of people older than 60 years in their population amounting to 20% (+/- 3%) on average. This number is expected to increase over 8 percentage points, on the average, to 28% (+/- 3%) by the year 2025 – reaching nearly one-third of the population. Hence, an increase in the opportunities to be trained in multi-disciplinary old age care is recommended for all countries in this group.

Group B includes countries with a fairly young population and few training opportunities in geriatric medicine. The average GERIND value for Group B (as well as average standard deviation) is similar to that of Group A. However, the population in Group B countries is significantly younger, and yet, of the three groups, the highest increase in the 60+ population (67%) is predicted for Group B over the next 25 years. In this light, strengthening the training in comprehensive old age care is recommended.

Group C countries offer a broad range of training opportunities in geriatric medicine and already have a large segment of older persons among the population. The average GERIND value for Group C is 77.9. It reflects the existence of a high number of geriatric facilities as well as geriatrics being a mandatory subject in most of these countries, and often included in the national curriculum (where a national curriculum exists). For Group C, an increase of 57% in the 60+ population is expected in the next 25 years, but from the data in this study, it could be concluded that the future generation of medical doctors is already being suitably trained. Still, in some countries, national harmonization might be of value.

The existence of national regulations

It can be hypothesized that countries with a national curriculum or national objectives for medical education will have a lower standard deviation in comparison to countries without a national regulation. Table 7 illustrates the comparison of standard deviations. Countries with only one medical school have been excluded.

Table 7: Standard deviation of GERIND versus existence of national curricula

Do national curricula/objectives exist?			
NO		YES	
Country	STDEV	Country	STDEV
Norway	0,7	Bulgaria	0,0
Guatemala	1,4	Ukraine	1,5
El Salvador	5,5	Ghana	2,1
Canada	6,7	Netherlands	3,1
Hong Kong SAR	8,5	Sweden	4,3
Israel	13,1	Croatia	12,4
Finland	18,9	Portugal	13,0
Yugoslavia	21,3	Germany	19,7
Denmark	21,5	Austria	23,5
Czech Rep.	22,8	Switzerland	24,7
Slovakia	24,0	Poland	27,2
Spain	24,7		
New Zealand	25,8		
Lebanon	26,4		
Greece	29,6		
Panama	35,7		
Lithuania	58,7		
AVERAGE	20.3	AVERAGE	12.0

The results support the hypothesis formulated: in countries without a national curriculum or objectives, the deviations are nearly twice as high (average 20.3) as in countries with national regulations (12.0). In countries like Austria, Croatia, Germany, Portugal, Bulgaria or the Ukraine, which have national regulations, action on the national level to increase training in geriatric medicine is recommended.

Development differences

In the first part of the analysis it was hypothesised that the high-income countries seem to offer more training in geriatrics in both quantity and quality. So, is geriatric medicine a “luxury good?” Is it taught only in countries with a large proportion of older persons who are recognized as a population segment who have special health care needs, and who have the right to a focused care-strategy? To elaborate these questions, a final analysis is made dividing the participating countries by development status. To receive a single aggregate GERIND index, every GERIND value of a country is weighted with the number of schools in this particular country, resulting in a conclusive average, sensitive to the size of a country within the development group.

The high-income countries have a weighted average GERIND of 50.3. The economies in transition score an average GERIND value of 33.0 and the “other countries” group scores an average GERIND value of 27.0. Reflecting the limited number of “other countries” in this analysis, the data are not characteristic and shall not be extrapolated when making conclusions about this group of countries. The data set for the high-income countries (especially in Europe), on the other hand, is large enough to allow a general picture of the situation. These aggregate data seem to reflect what was hypothesised earlier: higher development status seems to allow for better and more specialized training in geriatric medicine. Whether this difference is caused by the lack of resources in lower-income countries, the fact that older people make up a relatively small proportion of the population,

or another cause, cannot be proven with the data available. The distinction by development status has exposed a possible tendency, but there is no explanation of causality.

In conclusion, three groups have been identified:

Group A: few good training possibilities in geriatric medicine offered, with a high proportion of older persons among the population;

Group B: few good training possibilities in geriatric medicine offered, with a low proportion of older persons among the population; and

Group C: good training possibilities in geriatric medicine offered, and a high proportion of older persons among the population.

Action is recommended for either an increase in the training offered and/or for national harmonization regarding the general availability of training. It is interesting to note that no country could be identified in which there was a low percentage of older persons among the population, but good training possibilities in geriatric education being offered.

In the following text general conclusions and future recommendations are provided from the point of view of IFMSA, EMSA and WHO.

Conclusions and Future Recommendations

The International perspective from the view of IFMSA

The International Federation of Medical Students' Associations (IFMSA) the international voice of medical students in approximately 80 countries world-wide, was founded in 1951 and has always been active under the motto of "*working together for a healthier tomorrow.*" As medical students, health care providers, and medical leaders of the future the members of IFMSA recognise their important task of caring for the health of all persons of all ages. The health challenges of an ageing world population have been at the center of IFMSA activities in the past few years, with TeGeME as the symbol of that work.

Comparing the data of the 36 countries analysed in this report, we can conclude that most of the health care systems are not prepared to provide adequate care to a much larger older population even though there is a steep increase in the older population predicted for the next 25 years.

Outside of Europe, the countries/territories with GERIND values above 50 are Canada, China, Hong Kong SAR and New Zealand. This situation is alarming, especially when we consider that in "other countries" the percentage of older persons will rise between 100% and 400% between 2000 to 2025.

The countries in Groups B and C are in a better starting position. However, the countries in Group A need quick improvements in the old age care training offered since a low level of education in old age care presently confronts a high number of older people, and that number is rapidly increasing. (compare Plot 2 page 23).

Possible fields of activity could include workshops offering training to teachers or rotating exhibitions to raise awareness in communities and faculties about the urgency to act. Cost effectiveness and a high grade of motivation make students good partners in the different attempts to achieve a better medical training in old age care world-wide. Moreover, the medical students of today are the doctors and teachers of tomorrow and must already assume responsibility for the future of medical education.

The European perspective from the view of EMSA

From the point of view of the European Medical Students' Association (EMSA), the data related to geriatric teaching in Europe presents a situation that does not look very promising. While some countries are well prepared for the future increase in the number of people above 60 years of age (e.g. the Nordic countries, Group C), most of the Central and Southern European countries are ranked in Group A, showing a vast lack of geriatrics education. Nevertheless, a wide variation in content and depth is found even in those Group C countries teaching geriatrics at the undergraduate level.

The major task that will overcome the deficiency in Central and Southern European countries is the inclusion of geriatrics in undergraduate medical education. This could be achieved at the faculty level or through governmental action. Most of the European countries in Group A have a national curriculum or national objectives in medical education. Especially in the economies in transition and the German speaking countries (Germany and Austria) we see a strong correlation between the low GERIND and the absence of geriatrics in the national curricula/objectives. In Southern Europe the situation differs as national objectives are only found in Portugal, while Spain and Greece leave the curriculum development in the hands of the faculties. We can learn from the successful training in Group C countries, bearing in mind that most of them have geriatrics either included in their national curricula or national objectives, or they act pragmatically in the absence of national curricula/objectives. We strongly suggest to the Group A countries that they should include old age care in their national curricula/objectives in the next few years. For the faculties with low GERIND-values in countries without national curricula/objectives, we advise following the example of most of the Group C countries where the majority of medical schools teach geriatrics, possibly as a simple effect of the increased necessity.

Further research is needed to develop a model for comprehensive geriatric teaching to be implemented among the faculties with a low GERIND. Nevertheless there are some important aspects of such a model curriculum, whose importance is shown in this report. In the European faculties analyzed here, those that offer training in geriatric medicine teach it often in 20-40 hour courses, which include the physiological, psychiatric, pharmacological and pathological aspects of ageing. To treat older persons from an interdisciplinary point of view, more integrational training has to be offered. A life course perspective should be included, as well as emphasis on interaction with other health care staff. Curricula development is a very difficult and cost intensive issue. In many cases it leads to a great dependence on national regulations. Nevertheless, countries like Lithuania (Kaunas University), which do not have any national regulations, show us how geriatric education can be implemented in a very pragmatic way. We can see that it is especially those countries that are not bound to national regulations that are active in the development of new teaching methods and react fast to demographic and epidemiological changes. This advantage should not be jeopardized by an overzealous attempt for regulation in European undergraduate education. The heterogeneity of medical education systems gives us the chance to use this innovative spirit and pragmatism in all European countries, including those bound to national curricula/objectives. The initiative and the expertise of faculties with a high

GERIND-value should be used to develop model curricula as recommendations for other European medical schools, national institutions and the European Union authorities.

A significant difficulty emerges with the attempt to find appropriate ways to implement these suggestions into the already existing and more or less successful curricula of different countries and/or faculties. To get past this obstacle, we would suggest a multi-target approach at the local, national and regional levels.

At the local level, the medical schools could be informed and advocate in several independent ways. Medical students' associations involved in TeGeME (IFMSA, EMSA) could start action within their local groups or member organizations. Furthermore, lobbying to raise awareness and persuade policymakers, as well as faculty-representatives, on the importance of geriatric medicine in medical education among European institutions could be accomplished by WHO, IFMSA, EMSA, the Association of Medical Schools in Europe (AMSE, membership of the deans of several European medical faculties), and the Association for Medical Education in Europe (AMEE).

On the national level, Ministries of Health, Consumer Protection and Education should be lobbied through national medical associations, medical students' associations, IGOs and NGOs.

According to the Bologna Agreement, all European Union/European Economic Area-countries (EU/EEA) recognize each other's diplomas and degrees on the basis of the mutual trust they have in the ability of the other nations to provide a medical education. The inclusion of geriatrics in medical education could be achieved through special directives by the European Union authorities. To advocate on this level, specialized European associations representing the medical profession, especially the Comité Permanent des Médecins Européens - Standing Committee of European Doctors (CPME), or its associated organizations such as the Union Européen des Médecins Spécialisés (UEMS), could be approached through EMSA and included in this effort. A possible inclusion of this recommendation in the CPME's response to the "*Healthcare for the Elderly*"-paper of the European Union could be a first step into Europe-wide directives.

Following the increasing harmonization of the European markets and education facilities, this approach at the European Union level would not only affect the EU/EEA-countries, but all EU-candidate countries as well (including the economies in transition seeking further integration in the upcoming years). Aware of the fact that especially many of the faculties in economies in transition, and in German-speaking countries are bound to national objectives, the implementation of these curriculum reforms could have a major effect on the national curriculum directives in several countries. This positive consequence mainly arises because of the emerging exchange and harmonization in the academic fields between the EU- and the non-EU-countries. Overall, we can conclude that, even though the situation is not promising right now, we have enough examples in Europe to presume that improvement in old age care is feasible.

WHO's perspective

North or South, developing or developed, rich or poor - countries around the world are ageing. In developing countries rapid population ageing is a major contributor to the changing nature of demands on health care systems. As populations age these systems have to accommodate the care needs of older adults alongside other pressing needs such as child and maternal care. More advanced health care systems in developed countries also have to adapt their systems to shifting needs due to further population ageing. However, caution is needed in order to avoid equating ageing to disease or frailty (which would result in high

demands on health care services). This is a commonly held belief and in order to quash it, it is crucial to adequately train health professionals on old age care. Failing to do so puts in jeopardy any strategy for preparing health care systems in response to our fast ageing world.

Taking the above into account, ALC initiated this global study to identify where and how geriatric medicine is taught in undergraduate medical education. The importance of this education is clear: almost all of tomorrow's medical doctors will increasingly deal with older patients. Therefore, the basic principles of older age care should not be of exclusive concern to geriatric medicine specialists.

ALC promotes a holistic approach to training in old age care. This includes a life course perspective, which should be integrated into the training of all health care staff. Old age care should be highlighted especially in countries with fewer resources available for health care training of all health care professionals (in particular medical doctors) – these are usually the countries, which are faced with the double burden of communicable and non-communicable disease. This kind of universal training is far more important than focusing training on highly specialized geriatric care within tertiary facilities. In addition, the family and the community (including various sectors of the civil society such as NGOs and religious groups) must be strong partners in the provision of care for the vast majority of the older population.

ALC will continue to vigorously promote the development of basic training in old age care in the medical curricula. This is often facilitated by the establishment of chairs in geriatric medicine so that the expertise on, and advocacy for ageing issues is available at the individual medical school level.

Ideas for action

- Develop examples, pilot models and educational resources to assist conceptualisation and ease implementation; 'market' the inclusion of old age care; ensure adaptability and sensitivity to different teaching methodologies and cultures.
- Show that lessons can be drawn from existing holistic/ interdisciplinary approaches in geriatric training and encourage existing geriatric programmes to adopt a life course approach focusing on healthy and active ageing as well as specific disease processes.
- Develop steps and strategies for implementation that involve national bodies, school boards, political groups and the general public; in order to 'sell' this approach, lead by example by facilitating top-down acceptance.
- Encourage the review of admission criteria for medical schools so that they consider the social context of health; allow greater opportunity for older individuals with more personal life course experience to train in medicine (also recognising increasing life-expectancy and later retirement patterns).
- Recommend a life course approach be adopted in the training of all health care workers.
- Promote the life course approach beyond the undergraduate curriculum, into advanced training and the clinical environment.

References

1. United Nations, World Population Prospects: the 2000 up-date
2. United Nations, World Population Prospects: the 1998 up-date
3. Organization for Economic Co-operation and Development (OECD), Health Data Database, Paris, 1998
4. WHO, Evidence, Information and Policy Cluster, Global Burden of Disease database, 2000
5. Guralnik et al., Ageing in the eighties: The prevalence of co-morbidity and its association with disability. Advance data from vital and health statistics. No. 170. US National Centre for Health Statistics, 1989
6. Rantanen et al., Coimpairments: strength and balance as predictors of severe walking disability, J of Gerontology, Medical Sciences, 1999, Vol. 54A, No. 4, M172 – M176
7. Maelly & Duggan, The pharmacology of ageing, in: Pathy, (ed.) Principles and Practice of Geriatric Medicine, Second Edition, John Wiley and Sons, 1991
8. WHO, Ageing and Life Course Programme, 2000, activeageing@who.int

Annex I

In this annex all analyses for the individual countries are listed, organised according to the Groups A, B and C established through the comparative analysis of the GERIND-index versus the percentage of older persons in each country.

Group A:

A high proportion of older persons among the population characterizes countries in this group and geriatric education is insufficiently offered.



Austria has a national curriculum, which does not include geriatric medicine, and three medical faculties who teach geriatric medicine (Vienna, Graz and Innsbruck).

- In 2001 an independent unit for geriatric medicine and a geriatric sub-ward under internal medicine had been established in Vienna. In Innsbruck geriatrics is taught as an elective course through internal medicine, neurology and pathophysiology, as weekly lectures with a total duration less than 20 hours. In Graz, geriatrics is not taught at all with the argument that it is not part of the national curriculum. Pathological, physiological and psychiatric aspects of ageing are covered in all schools⁹.

The overall GERIND value for Austria, mostly based on the new curriculum in Vienna, is 26.7, with a standard deviation of 23.5 reflecting the large differences between the schools. All in all, 26.7 is a low value, considering that 21% of Austria's population was 60 years of age or older in 2000, and fast growing to 33% (60+) by 2025: a rise of 59%. The new curriculum in Vienna (whose individual GERIND score was 53) should be further examined for possible introduction in other schools.



Out of 39 medical faculties in Germany 21 participated in this study (54%), ranging in size from 289 students (Witten/Herdecke) to 5000 students (Ludwig-Maximilians-Universität München). There is a national curriculum, which does not include geriatric medicine. Almost all schools report (at least) a conservative curriculum.

- No school has an independent unit for geriatrics in the faculty, but 29% of university hospitals have an independent geriatric ward. Twenty-four percent of schools have at least one sub-unit in the faculty (80% under internal medicine, 40% under general medicine or psychiatry, and 20% under neurology or orthopaedics). One-third of schools has a sub-ward (under internal medicine, neurology, general medicine or psychiatry). Fourteen percent of the schools report that geriatrics is taught by other faculties, mostly by internal medicine or general medicine. Forty-three percent of the

⁹ Aspects of ageing specified in the questionnaire: anatomical, biochemical, physiological, surgical, general clinical, gynaecological, paediatric, social/preventative and/or public health, pharmacological, psychiatric/psychological, neurological, pathological aspects of ageing (several answers possible).

schools do not offer geriatrics in any way; one-third stating that there is no interest at the school and 44% arguing that it is not in the national curriculum.

- No schools report that geriatric medicine is mandatory. Aspects of ageing that are covered by the majority of the schools are the physiological, general clinical, pharmacological and neurological aspects.

The average GERIND value for Germany is 27.2. With 23% of its population currently older than 60 years of age, growing to 33% by 2025, the situation is comparable to Austria. The standard deviation for GERIND is 19.7, indicating that education in geriatric medicine varies substantially throughout the country.



Greece

In Greece all 7 medical schools participated in this study. The numbers of students per university range from 274 in Thessaloniki to 4000 in Athens. There is no national curriculum. The University of Crete offers an integrated curriculum, the University of Athens a conservative curriculum, and the other 5 medical schools problem-based learning curricula.

- Only the Aristoteleion University of Thessaloniki has an independent geriatric department and a hospital ward. The medical schools in Thessaly and Crete have geriatric sub-units hosted by the department for general medicine, including special sub-wards.
- No medical school stated an obligatory course of geriatric medicine. The University of Athens and the University of Thessaloniki offer an optional course in geriatric medicine, as part of the elective program. Geriatrics is taught in Athens in the 4th semester and in Thessaloniki in the 9th semester. Both universities offer a 26-hour lecture course, including only physiological aspects of ageing in Athens, while Thessaloniki also includes neurological and pathological aspects and optional visits to residences of older persons *“to gather information for research.”*¹⁰ In Thessaloniki and Athens interaction with other health care personnel is not offered during the classes.

The GERIND value for Greece is 32.5. Geriatrics is not offered in 43% of the schools, and in the others it is optional. Presently 23% of the population is 60+, expected to grow by 32% to 35% by 2025. More than half of the medical schools include anatomic, general medicine, gynaecological, pharmaceutical and psychiatric aspects of ageing in the overall teaching.

¹⁰ Contents of Geriatrics classes specified in the questionnaire: physiology, neurology, pathology, socio-psychological, health care services, ethical issues of old age.



Portugal

Five Portuguese medical schools (out of seven) took part in this study, ranging in size from 558 students (Salazar) to 990 students (Coimbra). The curriculum types are conservative, except in the Faculdade de Ciências Médicas de Lisboa, which offers an integrated curriculum in the clinical years. Two new faculties in Braga and in Covilhá, were only recently founded and thus not included in this study. These two faculties offer both a problem-based and an integrated curriculum. National objectives in medical education exist, but geriatric medicine is not included.

- There are no geriatric units or wards reported on an independent level or on a sub-level. In the Faculdade de Ciências Médicas de Lisboa geriatrics is taught through internal medicine. The main explanation of why geriatrics is not taught independently is that it is not part of the national objectives, but also cited is the lack of student interest.
- In the Faculdade de Ciências Médicas de Lisboa geriatrics is mandatory. Classes on the pathological, social and psychological and health-care-service aspects of old age are offered in a block of fewer than 20 hours. In the University of Lisboa Medicina there is the intention to introduce a *"free course on geriatric medicine."*

Portugal scores a GERIND value of 15.5. Older persons presently account for 21% of the population, growing to 32% of the total population by 2025, however geriatric medicine is taught only in one school.



Spain

Data were collected for 15 out of 24 medical schools in Spain (63%). The number of students ranges from 310 (Las Palmas) to 1802 (Complutense, Madrid). About one half of the participating schools have a conservative curriculum, the other half an integrated one. There is no national curriculum.

- None of the schools has an independent geriatric unit in the faculty, whereas about half have a geriatric ward, and most of the schools have a geriatric sub-ward (mainly under internal medicine, but also under psychiatry as in Santiago de Compostela). Roughly half of the schools have a geriatric sub-unit in the faculty, in all cases under internal medicine. In other schools the faculty of internal medicine, or, in some cases, psychiatry, surgery or neurology offer teaching in geriatrics.
- Thus, most of the schools teach geriatric medicine in some way. The reason for not offering specific geriatrics classes is the lack of interest reported by the school in Alcalá de Henares, and no information was provided from Zaragoza and Málaga.
- At those schools, which teach geriatrics in some way, it is a mandatory course, with the exception of the Complutense in Madrid. The semester in which geriatrics is offered ranges from the 5th to the 11th. Fifty percent of schools teach geriatrics classes on a weekly basis, and in the other half consecutively. All schools offer lectures, and some schools also offer bed-side-teaching, problem-based learning and visits to the hospital. Commonly there is interaction with other health personal, mostly nurses, less with clinical gerontologists and dieticians. Many aspects of geriatric medicine are covered except for ethical issues of old age. Some schools teach from a life course perspective

as at the Autonoma (Madrid), Las Palmas and Sevilla, where a course “*Influence of nutrition of children in ageing*” is offered.

- In general, all aspects of ageing are covered outside geriatric medicine. The Complutense, Madrid, and the Universidad Autonoma, Madrid, offer post-graduate studies.

Spain scores a GERIND value of 42.6, higher than the other countries presented above. However, this national average is actually kept low by schools with many students, such as Málaga, Zaragoza, Alcalá de Henares and Santiago de Compostela teaching geriatrics much less than schools like the Autonoma (Madrid), Valladolid and Las Palmas, whose GERIND values are over 80. The diverse picture in Spain results in a standard deviation of 24.7 from the national GERIND score. The lack of a national curriculum may be a reason for this.



Bulgaria

Out of five medical schools in Bulgaria, three were covered in this study. They have between 653 students (in Pleven) and 1143 students (in Plovdiv). The curriculum type is conservative and national objectives in medical education exist, but geriatric medicine is not mentioned.

- Geriatrics is not taught in any way, because no staff can teach it and because it is not part of the national curriculum. The schools teach divers aspects of ageing except for the paediatric aspects.

Bulgaria scores a GERIND value of 11. The older population (60+) is expected to grow by 26% between 2000 and 2025, rising from the present 22% to 28%.



Croatia

All four medical schools in Croatia, ranging from 264 students (Osijek) to 1765 students (Zagreb), participated in this study. Croatia has no national regulations for the curriculum of medical schools. All but Split University offer a conservative (discipline based) curriculum which integrates teaching blocks. Split has an integrated curriculum. Problem-based learning is part of the curriculum at the University of Rijeka.

- Osijek has a geriatric sub-unit under the department of health care and health economics, and Split has a sub-ward under the general medicine department as well as the psychiatric department. Even though Split reports a sub-ward, it states that there is no geriatric staff available to hold classes. In Zagreb no elective classes in geriatrics are offered due to the lack of interest from the students and the medical school, although such an elective subject existed previously.
- Osijek offers a mandatory course in geriatric medicine, which has to be taken in the 12th semester and contains socio-psychological aspects and health care services for older persons. It is a weekly course including 5 hours of lectures and 4 hours of field visits to older peoples' homes. Interaction with nurses takes place. Geriatrics is taught through public health and other pre-clinical and clinical courses in Rijeka and Zagreb. Rijeka University offers a postgraduate course including socio-psychological aspects of old age and the life course perspective. The teaching form is lectures and problem-based learning. In this course students interact with nurses, psychologists, social workers and dieticians.

- Other disciplines include various ageing related aspects. The University of Osijek only touches on general clinical aspects and the social/preventive and/or public health aspects of ageing, while others teach a much broader range of aspects of ageing.

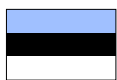
The situation in Croatia, with a national GERIND of 19.7 (standard deviation 12.4) is fairly heterogeneous: Osijek and Rijeka score over 30 in the GERIND index, but the national average drops due to Zagreb being the biggest school and having a low GERIND score. Croatia's 60+ population, currently 20%, is expected to grow by 33% by 2025, to 27% out of the total population.

Case study: Teaching geriatric medicine in Croatia

When the TeGeME study was started, many medical students in Croatia were asked about geriatrics being taught at their medical schools. Most of them could not believe that, among the "pile of subjects," geriatrics was not included. On the other hand, most of the hospital patients who are seen by the students are older or "soon to be older" people. Somehow, it appeared quite normal to learn a lot about the health issues of old age, yet not to have geriatrics as a special subject. Furthermore, most students responded that they would not like an additional subject to be introduced into their curricula because they thought there was no need for it.

All medical schools in Croatia have similar curricula, yet only the University of Osijek offers a course in geriatric medicine. All other schools teach aspects of ageing within other clinical subjects, such as internal medicine, orthopedics or surgery. Lack of specific geriatric knowledge is diminished by the current situation in hospitals: most of the patients are old, and after dealing with them on an everyday basis students do not feel that they did not learn about geriatric medicine. Learning about a presented disease of an older patient is considered to be a lesson in geriatric medicine. This opinion is even more strengthened during the clinical rotation on the internal medicine ward where interns, asked for advice by students, usually say that *"practicing internal medicine is basically practicing geriatrics."*

A postgraduate course in geriatric medicine is offered in Rijeka and Zagreb. However, it is very unlikely that geriatrics will be included in the new curriculum for medical education that is to be introduced in Zagreb. And in fact, the tendency in Zagreb for an integrated approach seems to be the wish of students and teachers. Most of them would like to have geriatric medicine taught in every subject as it is being done presently, so that pertinent aspects of ageing are included in specific subjects. In the past, an elective course in geriatric medicine was offered but, due to the lack of students' interest, it was not continued.



Estonia

Tartu University hosts the only medical school in Estonia with 675 mostly female (78.8%) students. The faculty has neither a geriatric unit nor a geriatric ward or sub-ward. Geriatrics is taught through the department of internal medicine. Estonia has a national curriculum and geriatrics is included as an elective course.

- There is an elective program (29 courses to choose from) including two courses in Geriatrics:

Introduction into Geriatrics

This course is usually taken in the 5th semester. It is an interdisciplinary course (for medical, nursing, social work and physiotherapy students) in which physiology and socio-psychological aspects of ageing are taught. The classes themselves consist of 13 hours of lectures, 3 hours of case-discussions and 4 hours of field visits to nursing homes and community centres for the aged. The interaction between medical students and nurses, physiotherapists, social workers and community volunteers is given in form of interdisciplinary discussions and teamwork.

Geriatrics I

This course is usually taken in the 7th semester. It is a 40 hour course for medical students. Basic assessment (medical, cognitive, psychiatric, functional and social) of geriatric patients is learned and practiced during lectures/seminars and practical studies.

- For residential students in internal medicine an 80-hour course in geriatrics is obligatory. The course includes basic principles of demography, theories of ageing, interdisciplinary assessment, specific features in diagnosis, treatment and rehabilitation of older patients, disease prevention and health promotion in old age, ethics of old age care and hospice care. Field visits into care institutions for older persons are included.
- During other theoretical classes ageing related aspects are included in anatomy, biochemistry, physiology, surgery, general medicine, social/preventive medicine and/or public health, pharmacology and pathology.

Estonia's GERIND is 30, due to the optional nature of the course and the lack of a geriatrics unit or ward. However the interdisciplinary nature of the course should be positively highlighted. The 60+ population in Estonia is now 20% of the total population and estimated to grow by 31% to 27% by 2025.



Ukraine

Out of 15 medical faculties in the Ukraine 14 were covered in this study, ranging from 1035 students in Uzhorod to 4247 in National Bogomolets. The curriculum type is conservative everywhere. National objectives exist and geriatrics is part of it, but only at the post-graduate level.

- There are no faculties, wards, or sub-wards for geriatric medicine. Some schools state that the reason for this deficiency is the lack of geriatric medicine at the undergraduate level in the national objectives, but also cited was "*old persons are not a priority*" (72%) and a lack of student interest (65%).
- In other medical school classes, all aspects of ageing are generally included with the exception of neurological, social preventative and/or public health and surgical aspects.

The GERIND value of 7.4 for the Ukraine is the lowest among all European countries. The low standard deviation of 1.5 indicates that the situation is alike in all schools. There is, however, the possibility of taking geriatrics as a post-graduate course. The Ukraine is expected to age as rapidly as other European countries: from the present 20% of the population at 60+ to 26% in 2025.



Yugoslavia

Data were collected for all 5 medical schools in the country. The number of students ranges from 118 (Podgorica) to 5207 (Belgrade). Three schools have an integrated curriculum; Kragujevac and Podgorica have a conservative one. A national curriculum does not exist.

- None of the schools have an independent geriatric unit in the faculty or a ward in the hospital. Belgrade (under general medicine), Novi Sad (under social medicine) and Kragujevac (under internal medicine) report sub-units. Sub-wards exist in Podgorica and Kragujevac (under internal medicine). The Medical School of Nis does not teach geriatrics in any way.
- Geriatrics is mandatory in Kragujevac. In Novi Sad it is an elective course. Podgorica is considering including it in the future. Geriatrics is being taught in the 5th semester in Novi Sad and in the 8th semester in Kragujevac, as weekly lectures of 20-40 hours. In Kragujevac, bedside teaching (15 hours) and interaction with nurses and dieticians is offered. The classes in Novi Sad cover physiology, neurology, pathology, social and psychological aspects of ageing, health care services and ethics; in Kragujevac the physiology, neurology and pathology aspects of ageing are covered.

Although Kragujevac and Novi Sad reach fairly high GERIND levels, 61 and 42 respectively, the national average of 28.1 is low because other schools offer much less. The national diversity is also reflected in the standard deviation of 21.3. In Yugoslavia the percentage of older population is somewhat lower compared to other countries in this group. From the present 18% of persons 60+, an increase to 24% is expected by 2025.



Former Yugoslav Republic of Macedonia

The FYR Macedonia has one medical school in Skopje with 1223 students. The curriculum type is conservative. A national curriculum in medical education exists but geriatrics is not mentioned.

- There is one independent hospital for geriatrics in Skopje. Geriatric medicine is offered as an optional course in the 12th term and consists of a one-week block with lectures covering care services for older persons. Social and preventative aspects of ageing are incorporated in other classes. Postgraduate studies are not offered.

The FYR Macedonia scores a value of 32 on the GERIND scale. FYR Macedonia had a 60+ population of 14% in 2000, and this is expected to increase to 23% by 2025.



Uruguay

Uruguay has one medical faculty at the Universidad de la República Oriental del Uruguay in Montevideo with 6145 students. The school has a curriculum " *which intends to integrate the disciplines.* " A national curriculum in medical education exists, but geriatric medicine is not included.

- The independent geriatric ward (Departamento de Geriatría) at the hospital has started to teach geriatric medicine to undergraduate medical students and other health science students. Many aspects of ageing are taught in a "tangential" way in other classes. A curriculum reform is presently under way, and the intent is to include geriatrics in the curriculum.

Uruguay's GERIND value is 31. The 60+ population share is presently 17%, and will be 20% by 2025. It is expected that timely curriculum reform will ensure adequate training of future medical doctors in Uruguay.

The countries analysed together in this group are characterized by offering insufficient undergraduate training in old age care for medical students. As they already have large proportions of older persons in their populations, it is recommended that immediate action be taken. In some cases this could be done at the level of the medical school itself (i.e. inclusion of teaching in geriatric medicine by the faculty). However, more effectively, action should be conducted at national level, particularly in countries where there are national curriculum regulations - for instance, through the inclusion of old age care as a mandatory subject in the training of medical students.

Group B:

Countries in this group have a low, but steadily rising older population segment and geriatric education is insufficiently offered.



All 3 medical schools in Panama were covered in this study, ranging in size from 290 students (Columbus) to 830 students (Panama University). All schools have an integrated curriculum. There is no national curriculum.

- Columbus University reports that it specializes in geriatric and emergency medicine, thus it has an independent geriatric unit in the faculty and a ward in the hospital. In Columbus geriatrics is mandatory, taught in the 10th term, and contains all the aspects of old age as well as a life course perspective. Weekly lectures (32 hours), bedside teaching (50 hours), and problem based learning (5 hours) are included. Field visits, work on the ward (5 hours), and interactions with nurses, psychiatrists, dieticians, clinical gerontologists and volunteers are included.
- The other two schools state that they have sub-units under internal medicine. In addition, Panama University has a sub-ward under internal medicine. However, this university does not report any form of teaching of geriatrics.

Since geriatrics is the specialty of Columbus University it scores 98 points in the GERIND index. However, being the smallest university in the country, the national average is lowered to 47.5 with a standard deviation of 35.7. This might reflect the lack of national regulations. In Panama only 8% of the population are over 60 years of age, yet by 2025 this number is expected to rise by 90% to reach 15%.



Kuwait

The Kuwait University Medical Faculty trains 530 students and offers a problem based curriculum.

- Various departments teach geriatrics, but no particular unit or ward exists. Contents of classes cover a broad range of aspects of ageing that is mandatory course material, and there is the intention to include it as an independent subject in the future.

Kuwait has a GERIND value of 46, due to the mandatory status of the present classes and the intention to expand the teaching. Currently only 4% of the population are over 60 years of age, but this number is expected to increase 3.5 fold to 15% by 2025. The intention to expand geriatric medicine is timely.



El Salvador

In El Salvador three schools out of six were covered in this study, with schools ranging in size from 150 students at the Dr. Vasquey Faculty of Sciences to 3000 students at the Universidad de El Salvador. There is a conservative curriculum at all the schools, but no national curriculum exists.

- There are no wards or units for geriatric medicine (either independent or on sub-level). At the Universidad Nueva San Salvador (UNSSA) and the Universidad de El Salvador geriatrics is being taught in part under internal medicine.
- The reasons why geriatrics is not being taught are that there is a lack of faculty interest, and that older persons are not a priority. General clinical, gynaecological, neurological and anatomic aspects of ageing are covered in other classes.

El Salvador scores a GERIND of 19.9 and has a relatively young population: the 7% of the population over 60 years of age today will grow to 10% by 2025. Although these absolute numbers are low, the growth rate is 48%.



Jamaica

The one medical school in Jamaica is in Kingston, the University of the West Indies, where 464 students are offered a problem based curriculum.

- Although there are geriatric sub-units under general medicine and psychiatry, no geriatrics classes are reported. The reason cited for the lack of geriatrics classes is that there is not interest nor from the students neither from the side of the faculty. In other classes, general clinical, social, preventative, pharmacological, psychiatric and anatomic aspects of ageing are being taught.
- There is an intention on the part of the students to include geriatrics in the future because of "*the experience at the IFMSA "Ageing and Health" conference in Porto in August 2000*". This class may be brought to the students through the Department of Community Health and Psychiatry.

Jamaica's GERIND value is 25. The 60+ population percentage is about 10% today, but expected to be over 14% by 2025.



Guatemala

Both medical schools in Guatemala were covered in this study. The Universidad de San Carlos de Guatemala (USAC) and Francisco Marroquin (FM), educating 3600 and 266 students respectively. Both schools have a conservative curriculum. A national curriculum does not exist.

- At USAC there is a geriatrics sub-unit under general medicine. At FM geriatrics is taught by internal medicine in the 10th semester in a four-week mandatory course that includes all aspects of ageing. USAC offers geriatrics as an elective, which includes physiology and public health aspects of old age. Both schools offer lectures as the form of teaching. There is interaction with psychiatrists at USAC and with clinical gerontologists at FM. Postgraduate studies are not offered.

Guatemala scores a GERIND value of 27. Guatemala has a young population with only 5% of the people being 60+ in 2000, and about 7% by 2025.



Palestine Authorities

The Al-Quds University in Jerusalem has 272 students and an integrated curriculum.

- Geriatrics is not being taught in any way, because old people are not considered a priority. General clinical, social and preventative, neurological and anatomical aspects of ageing are covered in other classes in the pre-clinical years.

The medical school in the Palestinian Authority has the lowest GERIND of the survey: a value of 4. The 60+ population makes up 5% of the current population, and a low rise to 5.6% by 2025 is predicted.



Ghana

All three medical schools in Tamale, Kumasi and Accra participated in this study, ranging in size from 75 students (new school in Tamale) to 541 students in Kumasi. The curriculum type is integrated in Accra, and problem-based in Kumasi and Tamale. A national curriculum and national objectives exist but geriatrics is not mentioned.

- No geriatric units or wards exist, and geriatrics is not taught in any other way. The reason given is that existing policies are not being implemented, and old people are not considered a priority. Accra and Tamale are planning to include geriatric medicine as a sub-unit of internal medicine. Biochemical, physiological, general clinical, gynecological, and pathological aspects of ageing are covered in other classes.

The GERIND score for Ghana is 11.9 with a standard deviation of 2.1. This low value probably due to the existence of a national curriculum. The population 60 years of age and over accounts for 5% of the total population and is expected to rise to 7% by 2025.

In the following box a medical student from Accra Medical School describes the situation from his personal point of view.

Case study: Geriatric medicine in Ghana

Our cultural belief is that older people are a precious part of our society. There are a few negative aspects to mention though, concerning how we care for older people: usually there are a lot of problems with care for older people when they are not in the hospital. When an older person has a disease like stroke, extra time-intensive care is needed when they leave the hospital. But after older patients are discharged from the hospital, giving them enough care becomes difficult, and many older persons die at home from complications. Community homes for older people do not exist in Ghana, and this has led to less than optimal care for those older people who cannot take care of themselves. Space is not made available for older people to meet and socialize, or to discuss their problems, consequently many older people are isolated. Older people who depend solely on their grossly inadequate pensions tend not to be very healthy because of lack of appropriate nutrition. Communities often lack well equipped hospitals, so older people rarely have access to higher standard hospitals. These are some of the problems that the older people of Ghana face. Interventions to improve this situation should not only focus on the hospitals, but also on the social aspects of the well-being of older persons in order to ensure healthy and active ageing.

The issue of teaching geriatrics in the medical schools is gaining ground in the curriculum of the schools. In the medical school where I am being trained (Accra), there is no formal course on geriatrics, but in our classes and in clinical practice issues that deserve explanation or modification in order to allow appropriate old age care are stressed by the lecturers.

For example, topics such as chronic renal failure, diabetes mellitus type 2, and malignancies are taught. In such lectures the main focus is on older people, and these classes are not very different from the lectures in geriatric medicine which I had the chance to attend in other countries. I think that, with the increase in the adult and aged population, there will be an increased emphasis on the issue of geriatrics in Ghana.

In the clinical years of my training in Accra, teaching patterns are similar to those in the pre-clinical years. Lectures are given which, in my perception, are lectures on geriatric medicine. Some of my lectures are about groups that care for the aged. Hence, through these lecturers more awareness is being raised about the aged. On the wards there is no separate ward for older people, but a general ward for adults. Many of our patients are older people though, and therefore, in practice on the wards we learn about how to modify our treatment plan to suit older patients. The issue of caring for older people is gaining popularity and I believe that we will soon be seeing a ward for geriatric patients, at least at my medical school.

During my community health rotation, I was asked to work on advocating for the improvement of health care for the aged in Ghana. This gave me more insight into the issue.

The Ministry of Health has come out with a policy which states that children under 5 years of age, pregnant women, and older people (over 70 years) are entitled to free medical care. This means that the needs of older people are being recognized much more now. In addition, organisations like HelpAge Ghana are being given more attention and support.

All the experiences that I have had during my training leave me with the impression that geriatric medicine is moving from being a peripheral issue to assume a much more central position in the training of medical students.



Lebanon

All four medical schools in Lebanon participated in this study, ranging in size from 60 students at St. Josef to 719 students at the Lebanese University. A national curriculum does not exist and the curriculum type differs among the schools.

- There are no independent geriatric units or wards. A sub-ward exists at St. Josefs under general medicine, and at Beirut Arab under internal medicine.
- In Beirut Arab geriatric medicine is a mandatory course of 20-40 hours covering socio-psychological aspects of old age. The other universities do not offer geriatrics at all, but St. Josef reports the intention to include it. In all schools, physiological, psychiatric and pathological aspects of ageing are being covered in other subjects.

Lebanon has a national GERIND value of 13.3 with a standard deviation of 26.4, reflecting the diverse situation. The score is low because the two biggest schools do not teach geriatric medicine nor do they report the intention to include it. The 60+ population segment is presently 8.5%, but expected to rise to 13.5% by 2025.

In many of the countries described above (Group B), older persons make up a small part of the population and these countries are not about to experience a rapid ageing. However, older people are particularly important contributors to societies, which are undergoing rapid social change, are exposed to major civil unrest, or are prone to emergency situations (natural or man-made). In such contexts, older people often play a crucial role, cementing societies together. Thus, adequate health care has to be provided in order to ensure their active participation in their communities - an important reason why medical doctors need to be adequately trained on old age care in such countries.

Group C:

The countries in this group are characterized by a high segment of older persons among the population and represent good examples for training medical students in geriatric medicine.



Lithuania

Lithuania has two medical schools situated in Vilnius and Kaunas. Kaunas Medical University has 927 students and Vilnius 624. Each university is responsible for its own curriculum resulting in different teaching modalities at both schools.

- Kaunas has a geriatric department and sub-wards for geriatric treatment in the wards of internal medicine and neurology. Vilnius University does not have any specific geriatric facilities.
- Kaunas University offers a three - week block course on “*normal ageing, social and medical aspects of ageing*” in the 11th or 12th semester. The content includes physiology, neurology, pathology, socio-psychological aspects of old age, as well as health care services for older persons, ethical issues, prevention and a life course perspective. This course includes 24 hours of lectures, 72 hours of bed-side teaching, 12 hours of problem-based learning and field visits to nursing homes. During the course the students interact with nurses,

clinical gerontologists and dieticians, which builds an interdisciplinary team with the physicians and medical students. The geriatric department also offers a postgraduate residency in geriatrics.

- Certain aspects of ageing including anatomical, biochemical, physiological, surgical, gynaecological, paediatric and pathological aspects are taught in both universities as part of the theoretical classes. General clinical aspects, social/preventive and/or public health aspects, pharmacological, psychiatric/psychological and neurological aspects of ageing are only taught at Kaunas Medical University.

The difference between the schools in Lithuania is great: Kaunas scores a GERIND value of 90, and Vilnius scores a 7. Since Kaunas is the faculty with more students, the national average is 57.5, with a standard deviation of 58.7. Thus, the average is not representative for single schools. The population over 60 presently accounts for 19% of the total population and is expected to rise to 27% by 2025.



Czech Republic

Data were collected for all 7 medical schools in the country. The number of students ranges from 600 (2nd Prague) to 2500 (1st Prague). Most of the schools have a conservative curriculum, the 2nd Prague has an integrated curriculum, and the 3rd Prague has a problem-based learning curriculum. There is no national curriculum.

- Two of the schools have an independent geriatric unit in the faculty (Masaryk and Palacky), and all except for Prague 1st and 3rd (72%) have a geriatric ward, but Prague 1st has a sub-ward. A sub-unit exists in Pilsen (one sub-unit each under internal medicine, social medicine, psychiatry, general medicine and neurology) and in Prague 1st (under nursing care). Geriatrics is being taught through internal medicine (Charles University), neurology (2nd Prague), and psychiatry, physiology and ethics (3rd Prague).
- Geriatrics is mandatory in all schools with the exception of 1st Prague and Palacky, where it is optional. The courses are being taught between the 8th and the 12th semesters.
- In 28% of the schools geriatrics is taught on a weekly basis, in 43% consecutively. The main class type is lectures, but in many cases bed-side-teaching and problem-based learning is offered. Generally, many other aspects of ageing are taught through other classes. A life course perspective is only embraced in Pilsen. In Pilsen post-graduate studies are offered in geriatrics/gerontology, under the department of social medicine and public health.

In the Czech Republic a range of geriatric teaching is offered. On average the GERIND value is 61.2 with a standard deviation of 22.8. Some schools are exemplary, like Pilsen, Palacky and Masaryk with GERIND scores between 75 and 90. On the other hand, the biggest faculty, Prague 1st, scores 31, thus lowering the overall GERIND for the country. Presently about 18% of the population are 60+ and almost 29% will be 60+ in 2025 (a growth of 61%).



Poland

Out of 12 medical schools in Poland, 7 participated in this study, ranging in size from 1206 students (Bydgoszcz) to 1680 students (Warsaw). All schools offer an integrated curriculum.

National objectives in medical education exist. Geriatric medicine is mentioned as an optional course.

- Two schools (Warsaw and Bydgosz) have an independent unit for geriatric medicine in the faculty, and have an independent geriatric ward. Three schools have a sub-ward under internal medicine (Bialystok, Lublin and Gdansk). Where no geriatric unit exists, the faculty of internal medicine teaches it (in Wroclaw it is the dentistry faculty).
 - Geriatric classes are reported to be mandatory at 72% of the schools. Lodz does not teach it at all (although they mention the intention to include it) and Wroclaw only teaches geriatrics in connection with dentistry. The content of geriatrics courses does not cover health care services and ethical issues. A life course perspective is offered in Lublin and Bialystok. All schools teach a broad range of aspects of ageing through other classes.
 - Two schools (Warsaw, Bydgosz) teach 40-80 hours in a consecutive course, the other four (Bialystok, Lublin, Gdansk, and Wroclaw) teach 20-40 hours in a weekly course. In all these schools interaction is offered with nurses, clinical gerontologists and in Bydgosz with dieticians. The main class type is lectures, but bed-side teaching is also offered. In all schools (except in Lodz), clinical work in geriatrics on the ward is offered.
- The GERIND value for Poland is 55.2 and the standard deviation is high at 27.2. Schools with many students in Warsaw and Bydgosz both score over 80, which increases the national average. A growth of 59% is expected in the proportion of the older population (60+) from 16.5% in 2000 to over 26% by 2025.



Slovak Republic

Out of 3 medical faculties in the Slovak Republic, 2 participated in this study: Safarik teaches 1400 students and Comenius 1800. The curriculum type is both conservative and integrated. National objectives in medical education do not exist.

- Safarik has an independent unit for geriatrics in the faculty, and both schools have an independent geriatrics ward. Geriatrics is a mandatory subject in both schools and is taught in the 9th term. Neurology, pathology and "*specific problems of geriatric patients*" are mostly covered in the classes. Of the aspects of ageing taught in other courses, paediatric, gynaecological and surgical aspects are not included.

The Slovak Republic scores a GERIND of 68.9. The difference between the schools is high: Safarik scores 88 and Comenius scores 54. The segment of older persons is expected to grow 61%, from 15% in 2000 to 25% by 2025.



Denmark

All three medical schools in Denmark participated in this study and they range in size from 455 students (Copenhagen) to 2500 students (Aarhus). The curriculum type is conservative in Aarhus and Copenhagen, and integrated in the Southern University. The curriculum development is the responsibility of each school.

- None of the schools has an independent unit for geriatrics in the faculty, but all have an independent geriatrics ward. The Southern University and Aarhus also have a geriatric sub-unit under internal medicine, which teaches geriatrics at these schools. Geriatrics is mandatory at the Southern University and optional in Aarhus and Copenhagen. In

Aarhus and Southern University a broad variety of subjects is covered, while Copenhagen covers neurological, social psychological and health care service in geriatrics classes. Generally all aspects of ageing are included in other classes, with the exception of paediatrics.

Denmark scores a GERIND value of 65.4 with a standard deviation of 21.5. Copenhagen has the lowest value (40), Aarhus scores 62 and the Southern University scores 83. Twenty percent of the population is 60 + today and this segment is expected to grow by 48% to 30% by 2025.



Finland

Data were received for all five medical faculties in Finland. Tampere is the smallest school with 370 students, Helsinki is the biggest with 682 students. The curriculum development is the responsibility of each school and differs throughout the country.

- All schools teach geriatrics, including a life course perspective in a mandatory course. With the exception of Oulu, all have an independent geriatric unit in the faculty, Turku and Helsinki also have an independent geriatric ward and Oulu has a sub-ward (under internal medicine). Tampere and Helsinki have professors for geriatrics. In Turku, the university collaborates with the geriatric hospital of the city to organise geriatric teaching, research and post-graduate studies. All schools offer post-graduate studies.
- In the Universities of Helsinki, Oulu and Turku the geriatrics courses are being taught during the 6th year (11th term), and in Kuopio in the 5th year. In Helsinki, a lecture called "*Old age and the meaning of life and health changes related to it*" is held in the 5th year. Tampere teaches a course on ageing in the 2nd year, followed by clinical courses and practical work with older people. Students also learn about almost all aspects of ageing through other classes (exceptions: paediatric and surgical aspects).
- All schools offer the courses as consecutive classes except for Oulu where it is taught on a weekly basis. Common class types are bedside teaching, problem-based training and field visits to private homes, nursing homes and community centres. Generally, there is interaction with other health care staff, mostly nurses but also with clinical gerontologists and psychologists.

The GERIND in Finland is 74.9 with a standard deviation of 18.9. Helsinki and Tampere, the biggest and the smallest schools, reach a score of 96 each, while Oulu has the lowest score with 55. It can be pointed out that all of Finland's schools score over 50. The figures indicating rapid population ageing are 20% of persons 60+ in 2000 and 32% by 2025.



Iceland

There is one medical faculty in Iceland, in Reykjavik, with 263 students. The curriculum type is integrated. A national curriculum exists for medical education and geriatric medicine is mandatory.

- The school has an independent unit for geriatric medicine and a ward in the hospital. Geriatrics is taught in the 8th term. The content of classes is very broad. Teaching duration is 40 hours in a one-week block course. There is interaction with nurses, clinical gerontologists and social workers. The school teaches many other aspects of ageing in

other subjects (except surgical and paediatric aspects). The school offers a postgraduate program.

Iceland scores a GERIND value of 91. Older persons made up 15% of the population in 2000 and are expected to reach 24% by 2025.



Israel

All 4 medical schools in Israel participated in this study, having between 380 students (Ben Gurion) and 870 students (Sackler). The curriculum type is conservative, except for Ben Gurion where a problem based curriculum is offered. A national curriculum does not exist.

- All schools except for Technion have an independent geriatric unit and a ward. In Technion there is a sub-unit and a sub-ward, both under general medicine. The reported reason for the lack of independent units there is that geriatrics is not considered a priority. In all schools geriatrics is taught in the 11-12th term. Geriatrics is mandatory in all the schools. Sackler and Ben-Gurion offer post-graduate studies. Geriatrics classes generally cover all aspects of ageing except for pathologic aspects. All schools teach aspects of ageing in other courses except for paediatric and anatomic aspects. Only at Ben-Gurion is a life course perspective taught through the "*Cycle of life*" course.
- Technion teaches 20-40 hours in a weekly course. All other schools offer block courses of 2 weeks duration with about 80 teaching hours. Interaction with nurses, clinical gerontologists and social workers is offered.

The GERIND value for Israel is 85.4, the standard deviation 13.1. About 13% of the population is over 60 years of age at present, a number which is expected to increase to 18.5% by 2025.



Malta

There is one medical faculty in Malta, in Pieta, with 240 students. The curriculum type is conservative. A national curriculum in medical education exists, and includes geriatrics as a mandatory subject.

- The University of Malta has an independent geriatric unit and a ward in the hospital. Geriatrics is taught in the 7th term. Contents of classes are very broad, but do not cover pathological aspects. Classes are 14 hours of weekly lectures and bedside teaching. A post-graduate program "*Diploma in Geriatrics and Gerontology*" and "*Masters in Geriatrics and Gerontology*" is offered. In other subjects physiological, surgical, neurological and pathological aspects of ageing are covered.

Malta scores a GERIND value of 86. The segment of older persons is expected to rise by 67% from 17% at present, to 28% by 2025.



The Netherlands

Out of 8 medical faculties in the Netherlands, 4 participated in this study. Throughout the country the number of students in each school is fixed at 1400, but the curriculum type differs. National objectives in medical education exist.

- Maastricht and Rotterdam have an independent unit for geriatrics, and all schools surveyed have an independent geriatric ward. Schools without an independent unit have a geriatric sub-unit under internal medicine. Geriatrics classes are reported to be mandatory and taught between the 7th and the 12th semesters, depending on the school. Three schools (Leiden, Rotterdam, Utrecht) offer postgraduate programs.
- The contents of classes are broad and cover a life course perspective. Three schools teach in a block for 3-6 weeks offering lectures as well as bedside teaching, and Utrecht teaches a weekly course. Except for gynaecological, surgical and paediatric aspects, ageing aspects are also integrated in other classes.

The Netherlands scores a GERIND value of 90.2 with a negligible deviation. It could be hypothesised that the situation might not be much different in the schools which did not take part in this study, since national objectives exist. The Dutch older population accounts for 18% of the total population today, and will be 23% by 2025.



Norway

Out of the four medical faculties in Norway, two participated in this study, Norges Teknisk-naturvitenskapelige Universitet (NTNU, 493 students) and Bergen (865 students). The curriculum type is conservative in Bergen and problem-based in NTNU. A national curriculum does not exist.

- Both schools have an independent unit for geriatrics and a ward in the hospital. Teaching geriatrics is reported to be mandatory. At NTNU geriatric medicine is taught in various terms, and at Bergen in the 8th term. The content of the classes is broad, and a life course perspective “*to put it all in perspective*” is offered in both schools. Both schools offer all class types, while Bergen also offers visits to nursing homes and NTNU interaction with nurses and physiotherapists. Both schools offer postgraduate programs.

Norway, scores a GERIND value of 95.3, the highest national average in this study. The Norwegian older population accounts for 19.5% today (2000) and is expected to be 28.5% of the total population by 2025.



Sweden

Out of six medical schools in Sweden, four were covered in this study, ranging in size from 437 students (Linköping) to 650 students (Uppsala). The curriculum type varies. National objectives exist and geriatric medicine is a mandatory part of them.

- Umea is the only school to have an independent unit for geriatrics, but all others have a sub-unit and all schools have an independent geriatric ward. Uppsala and Gothenburg teach geriatrics under internal medicine, Linköping under psychiatry. Geriatrics is being taught between the 6th and the 10th semester in different schools.

- All aspects of ageing, except for neurology, seem to be covered in the classes. A life course perspective is offered by Gothenburg, including paediatrics and a class named *"The patient as individual who has done a lot of different things"* is offered in Upsala. Physiological, anatomical, social/preventative, general medicine, pharmacological, psychiatric, neurological and pathological aspects of ageing are widely covered independent from geriatrics classes. In Gothenburg, post-graduate studies are offered.
- All schools teach geriatrics as a block course for 1-3 weeks. All class types are offered. All except Gothenburg offer field visits to older peoples' homes or to community centres, and in Liköping visits are made to the dementia ward and the hospice ward of the hospital. In all schools geriatrics is offered as practical clinical work on the ward and emphasis is made to interact with other health care personal.

The GERIND value for Sweden is 85.4 with a standard deviation of 4.3. The population segment of older persons (60+) will rise from 22% today to 33% by 2025. Since national objectives exist and the SD is low, it can be hypothesized that the training in geriatrics in the schools not covered in this study is similar to the training offered in schools, which took part in the study.



Canada

Ten out of the 16 medical schools in Canada were covered in this study, ranging in size from 120 students (McGill) to 735 students (Montreal). The majority (90%) has an integrated curriculum. A national curriculum does not exist.

- Nine schools have an independent geriatric unit in the faculty and all have a ward. The exception, Montreal, has a sub-unit under internal medicine and general medicine. In all schools except Calgary geriatrics is obligatory, taught between the 4th and 6th term and all but Saskatchewan offer geriatrics for post-graduate study.
- Canadian schools cover a broad range of geriatrics aspects. Six schools include a life course perspective. Teaching is offered mostly in block courses, and mainly as lectures. Field visits to old persons' homes are also frequently offered. Interaction takes place mainly with nurses, but also with psychiatrists, clinical gerontologists and social workers. All but social and preventive aspects of ageing are covered in other subjects.

Canada scores a GERIND value of 89.5 and a standard deviation of 6.7. The population over 60 years of age is expected to rise by 67% between 2000 and 2025, from 17% to about 29%.



Switzerland

In Switzerland all five medical schools participated in this study. The numbers of students per university ranges from 776 in Lausanne to 2300 in Zurich. Medical teaching is organized by the local curricula and implemented by the medical schools according to national objectives. Basle, Bern and Zurich offer conservative curricula, while Lausanne focuses on integrated teaching and Geneva has a problem-based learning curriculum. Problem-based learning forms part of the curricula of Bern and Lausanne as well.

- Four of five universities have independent geriatric departments (Basle, Geneva, Lausanne and Zurich). All schools have geriatric wards. Geriatric medicine is mandatory at Basle, Geneva, Lausanne and Zurich, which also offer post-graduate studies in

geriatrics or gerontology. Geriatrics is taught in Lausanne in the 5th semester in Zurich in the 7th and 8th semesters, while it is integrated in Basle between the 1st and the 6th years. Geneva covers geriatric case studies between the 2nd and the 5th years.

- The course-content at these four universities includes a broad range of aspects. In addition, Lausanne offers demographic aspects and Geneva offers ophthalmology and forensic medicine. Bern offers geriatrics as an optional course under internal medicine, pharmacology and psychiatrics. The life course perspective is included in general medicine in Basle and in internal medicine in Zurich. The course length ranges from 20-40 hours in Lausanne and in Zurich, to 80-120 hours in Basle and Geneva. Zurich, Lausanne and Basle teach on a weekly basis. In Geneva, one third of the 4th-5th year students spends a mandatory 8-week clerkship on a geriatric ward. In Zurich, Lausanne and Basle work on the ward is offered as well. Interaction with a broad range of other professionals is given (for example with ergo-therapists (Basle, Geneva) physiotherapists (Basle, Geneva), home carers (Lausanne) and ministers of religion (Basle, Geneva)). In Zurich, Lausanne and Basle multidisciplinary work as a team is emphasised.

The GERIND value for Switzerland is 83.2, the standard deviation 24.7. The current 21% of the population at 60+ are expected to increase to 36% by 2025.

A personal experience from a medical student from Geneva is described in the following case study.



China, Hong Kong SAR

Both medical schools in Hong Kong participated in this study. The Chinese University (CU) has a conservative curriculum, and the University of Hong Kong (UHK) has a problem-based curriculum. A national curriculum does not exist.

- CU has an independent geriatric faculty and a ward. UHK has a ward and geriatrics is taught by internal medicine. In both schools geriatrics is mandatory and post-graduate studies are offered.
- The content at UHK covers a broad range of aspects including *"acute and chronic rehabilitative Geriatrics."* A life-course perspective is covered through *"special sessions on 'Ageing' and 'Paediatrics & Adult Medicine' in the 4th year"*. At CU, a class called *"Common presentation of illness in the older people, prescribing age-related physiological changes, nutrition, rehabilitation, modes of service delivery, end of life issues and palliative care"* is offered. Both schools offer a block course with lectures, bedside teaching and at UHK also problem-based learning. Field visits to older peoples homes are offered. There is interaction with nurses, psychiatrics and social workers. At CU there is also interaction with therapists, and at UHK with volunteers.

The CU scores 67, and the HUK scores 79 for GERIND values, resulting in a national average of 73. The 60+ population of Hong Kong is expected to double between 2000 and 2025 from 14% to 28%.

Case Study: Learning Geriatrics at the Medical Faculty of Geneva, Switzerland.

Due to rapid population ageing, the Swiss medical curricula is facing deep changes. Swiss geriatricians have proposed a project to have common learning objectives for geriatrics throughout the country.

In Geneva, until 1994, only eight hours were allocated to the undergraduate geriatrics program at the "Faculté de Médecine". This program was not mandatory and was not evaluated. A new curriculum was instituted in 1995, and is now fully implemented. Geriatrics is offered in undergraduate education, and the curriculum requires active learning skills, with an emphasis on scientific knowledge, clinical and communication skills, and "attitude" training. Geriatric training is integrated in the 2nd year, and the teaching style is problem based. Case studies which are related to the health of older patients are incorporated in the 3rd year and include, among others, "*perception and motor control*" or "*memory and cognitive functions.*" Integrated into these two blocks is training in clinical skills and community oriented skills. Related seminars are given about cognitive function, examination, and decisional capacity. Further, two modules on locomotion and infections are taught. Geriatrics training ends in the 3rd year with a final four-week block of community experience when students investigate a community health issue and present their findings. In three workshops and three lunch-meetings the students meet older people from the community. Topics covered are: physical and mental health, independence and autonomy, a multidisciplinary approach, the role of older people in society, and community resources for the care of older people. Years four and five include required clinical rotations. These years are divided into units of clinical learning per discipline and into integration units. The first integration unit addresses the basic principles of clinical care. Its main objectives are to help students to further integrate basic sciences concepts, and to develop their clinical knowledge and their problem-solving abilities. In the first integration unit, a 3-week block coordinated by geriatricians, neurologists, and psychiatrists suggests the following themes: stroke, dizziness and falls, dementia, malnutrition, nutritional assessment, and delirium. Related seminars emphasize important aspects of the geriatric assessment, such as functional assessment, evaluation of the social network, mental examination, and assessment of nutritional status. End-of-life issues and principles of gerontopharmacology are also discussed in this multidisciplinary block. Other concepts integrated in the surgery and internal medicine pre-clinical blocks are pre-operative assessment and osteoporosis screening and prevention. An «ageing game» seminar, organized in collaboration with physiotherapists and ergotherapists, allows the students to face physical impairment, and its evaluation. All students are exposed to the home care of frail older people during a one-week rotation in a geriatric outpatient clinic, as part of a four-week «community medicine» rotation. One case study focuses on palliative care, pain assessment and treatment.

One third of the students have greater exposure more exposed to in-patient care of older persons because they spend their eight-week internal medicine clerkship at the University Geriatric Hospital. These students interact with other health professionals who are in the network of old age care. Eight seminars on legal and bioethical topics are integrated in the internal medicine clerkship. Related important topics are also addressed in clerkships with the Departments of Surgery, Obstetrics-Gynaecology (urinary incontinence), Psychiatry (depression versus mild dementia, psychotic disorders, advanced directives, guardianship), Ophthalmology (diabetic retinopathy, glaucoma, macular degeneration, cataracts, evaluation of older drivers) and Neurology (Wernicke aphasia, stroke, Parkinsons disease, mental examination).

The University of Geneva Geriatrics Unit offers a 2-3-month program titled "*Geriatrics at hospital and in the community*" for 6th year students. The aim of the clerkship is to acquire medical knowledge in internal medicine and geriatrics, in the hospital and the community. A growing interest has been shown by students for this program.

Conclusion

Youth in developed countries are often brought up in nuclear families, and thus might never get to know their older relatives. When any of these youth become medical students and see only extremely frail older patients during their training, they may not understand that older people can be interesting, dynamic members of society. In geriatrics training, therefore, it is important to emphasize the role of older citizens in the community, and to facilitate the contacts of medical students with older people who have successfully aged. Multi-disciplinary and community-based training is the key to equipping the future generation of health professionals with skills and knowledge to work with a positive attitude in the care of older patients.

References: Huber P., MD, Geriatrics department, University Hospitals of Geneva, Switzerland, *Integration of Geriatrics in a new Problem-Based Undergraduate Curriculum at the Medical School of Geneva*. In Michel JP, Hof PR, editors. Management of Ageing. The University of Geneva Experience. Basel: Karger; 1999. Pp 217-23; University of Geneva, Medical Faculty www.medecine.unige.ch



New Zealand

All four medical schools in New Zealand participated in this study. The schools range in size from 180 students (Wellington) to 650 students (Auckland). A regional curriculum/objectives in medical education exist and all schools have an integrated curriculum.

- Auckland and Christchurch have both an independent geriatric unit in the faculty and a ward. Dunedin has both a geriatric unit and a ward at a sub level. Wellington does not have special facilities, but geriatrics is taught under internal medicine. In all schools geriatrics is mandatory and all except Dunedin offer post-graduate programs. Dunedin, Auckland and Christchurch cover a broad range of ageing aspects, while Wellington covers only neurology and physiology, but also offers the class "*Common medical conditions in older age.*" A life course perspective is included in all schools.
- Auckland and Christchurch teach geriatrics in 40-80 hour blocks, the others teach less than 20 hours on a weekly basis. Field visits to older peoples' homes are offered, as are visits to community centers and nursing homes. All the schools offer practical work on the ward. Interaction occurs mainly with nurses, psychiatrists, clinical gerontologists, social workers and therapists. The schools teach all aspects of ageing though other subjects except for surgical, paediatric and biochemical aspects.

The GERIND value for New Zealand is 87. The standard deviation of 25.8 indicates differences despite a regional curriculum. There is a predicted increase from today's 15% of older persons (60+) in the population to 25% by 2025.

This group of countries is characterized by a high percentage of older persons among the population, and medical schools who, for the most part, offer solid training in geriatrics. Where that is not the case, expansion of training opportunities should be envisaged in order to guarantee comprehensive training in old age care to all future medical doctors. Special emphasis should be given to the integration of the life-course perspective into all of the curricula. Furthermore "models of good practise" in geriatric training should be actively pursued.

Annex II

ISO CODE	COUNTRY	Name of School	GERIND
AUT	Austria	Leopold-Franzens Universität	19.0
		Karl-Franzens Universität Graz	8.0
		University of Vienna	53.0
BLG	Bulgaria	Higher Medical School -Plovdiv	11.0
		Higher Medical School -Pleven	11.0
CAN	Canada	McMaster University, Hamilton	99.0
		McMaster University, St. Johns	98.0
		University of Saskatchewan	96.0
		University of Manitoba	95.0
		University of Calgary	78.0
		Dalhousie University	88.0
		McGill University	89.0
		University of Ottawa	84.0
		Université de Montréal – Faculté de Médecine	88.0
		Université Laval - Faculte de Medicine	87.0
HKG	China, Hong Kong SAR	The University of Hong Kong	67.0
		The Chinese University of Hong Kong	79.0
CRO	Croatia	Medical School University of Split	28.0
		University of Osijek "Josip Juraj Strossmeier"	39.0
		Medical School University of Rijeka	32.0
		Medical School University of Zagreb	10.0
CZE	Czech Republic	Masaryk University, Medical Faculty	91.0
		University of Palacky, Medical Faculty	74.0
		Charles U in Prague, Faculty of Medicine HradecKralove	58.0
		Charles University in Pilsn, Medical Faculty	89.0
		1st Medical Faculty	31.0
		2nd Medical Faculty, Charles University	56.0
DEN	Denmark	Det Sundhedsvidenskabelige Fakultet, U of Aarhus	62.0
		University of Southern Denmark	83.0
		University of Copenhagen	40.0
SLV	El Salvador	Universidad de El Salvador, Facultad de Medicina	21.0
		Universidad Nueva San Salvador (UNSSA)	16.0
		Facultad de Ciencias de La Salud Dr. Luis E. Vasquez,	10.0
EST	Estonia	Tartu University	30.0
GHA	Ghana	University of Ghana	14.0
		School of Medicine and Health Sciences, Tamale	13.0
		School of Medical Sciences, Kumasi	10.0
GTM	Guatemala	Universidad Francisco Marroquín, Facultad de Medicina	28.0
		Universidad des San Carlos de Guatemala -USAC-	26.0
JAM	Jamaica	University of Western Indies	25.0
FIN	Finland	The University of Tampere	96.0
		University of Helsinki - Medical Faculty	96.0
		University of Oulu - Medical Faculty	55.0
		University of Turku - Medical Faculty	64.0
		University of Kuopio - Medical Faculty	69.0
		University of Witten/Herdecke	31.0
DEU	Germany	Medizinische Hochschule Hannover	18.0
		University Clinic of RWTH Aachen	41.0
		Rheinische Friedrich-Wilhelm-Universität	8.0
		Ernst-Moritz-Arndt Universität Greifswald	26.0
		Halle/Wittenberg	2.0
		Ludwig-Maximilians-Universität, München	12.0
		Medizinische Universität zu Lübeck	24.0
		Phillips-Universität Marburg	2.0

		Technische-Universität München	20.0
		University of Wuerzburg	2.0
		University of Leipzig	24.0
		Humbolt-University of Berlin	42.0
		Ruprecht-Karl Universität, Heidelberg	66.0
		Universtät Rostock	3.0
		Johann-Wolfgang-Goethe Universität	49.0
		Johannes-Gutenberg-Universität	18.0
		Freie Universität Berlin	57.0
		University of Cologne	33.0
		Karl-Ruprechts-Universität, Klinikum Mannheim	56.0
		Christian Albrecht Universität Kiel	9.0
GRE	Greece	Medical School of University of Thessaly	52.0
		Medical School of University of Crete	45.0
		Medical School of University of Thrace	0.0
		Medical School of University of Athens	10.0
		Medical School of University of Ioannina	4.0
		Medical School of University of Patra	0.0
		Medical School of Aristoteleion University	72.0
ISL	Iceland	University of Iceland, Medical Faculty	91.0
ISR	Israel	Sackler Faculty of Medicine	90.0
		The Hebrew University - Hadassah Medical School	88.0
		Technion University	66.0
		U of Ben-Gurion , J. & E. Goldman School of Medicine	96.0
KWT	Kuwait	Kuwait University - Medical Faculty	46.0
LEB	Lebanon	St Josef University	22.0
		Lebanese University	3.0
		Beirut Arab University	60.0
		American University of Beirut	5.0
LTU	Lithuania	Vilnius University, Medical Faculty	7.0
		Kaunas Medical University	90.0
MKD	FYR Macedonia	Medical Faculty Skopje – U of St. Cyrill & Methodius	32.0
MLT	Malta	University of Malta Medical School	86.0
NED	Netherlands	Universiteit Leiden, Medische Faculteit	88.0
		Universiteit Maastricht - Faculteit Geneeskunde	90.0
		Erasmus University	95.0
		University of Utrecht	89.0
NZL	New Zealand	Otago University – Christchurch School of Medicine	95.0
		Otago University – Wellington School of Medicine	42.0
		Otago University – Dunedin School of Medicine	83.0
		Auckland Medical School	98.0
NOR	Norway	NTNU	96.0
		The Medical Faculty of the University of Bergen	95.0
PAN	Panama	Columbus University	98.0
		Universidad Latina	33.0
		Universidad de Panamá	40.0
PSE	Palestine	Al-Quds University Medical School	4.0
POL	Poland	Medical University of Bydgoszcz	86.0
		Medical University of Białyostok	55.0
		Medical University of Warsaw	90.0
		Medical university of Lublin	55.0
		Medical University of Łódź	21.0
		Medical University Of Wrocław	22.0
		Medical University of Gdansk	50.0
PRT	Portugal	Facudade de Medicina da Universidade de Coimbra	11.0
		Faculdade de Medicina de Lisboa	13.0
		Faculdade de Ciências Médicas de Lisboa	38.0
		Instituto de Ciências Biomédicas Abel Salazar	8.0
		Faculdade de Medicina do Porto	6.0
SVK	Slovakia	Comenius University	54.0

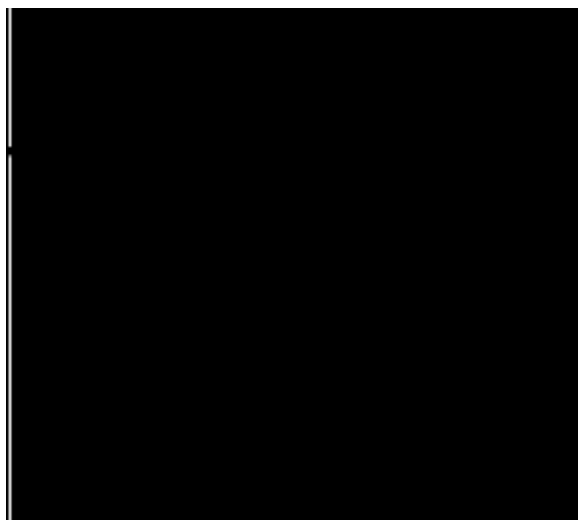
		University of P.J. Safarik	88.0
ESP	Spain	Faculta de Medicina Autónoma, Madrid	84.0
		Facultad de Medicina de Málaga	7.0
		Facultad de Medicina de Zaragoza	8.0
		Facultad de Medicina del País Vasco	45.0
		Facultad de Medicina Complutense	36.0
		Facultad de Medicina de Santiago	26.0
		Facultad de Medicina de Extremadura	33.0
		Facultad de Medicina de Granada	40.0
		Facultad de Medicina de Las Palmas	82.0
		Facultad de Medicina de Murcia	61.0
		Facultad de Medicina de Córdoba	43.0
		Facultad de Medicina de Cádiz	69.0
		Facultad de Medicina de la Universidad de Alcalá	25.0
		Facultad de Medicina de Sevilla	51.0
		Facultad de Medicina de Valladolid	76.0
SWE	Sweden	University of Uppsala, Faculty of Medicine	82.0
		Umea University Medical School	89.0
		The Medical Faculty of Gothenburg University	79.0
		Faculty of Health Sciences, University of Linkoping	81.0
CHE	Switzerland	University of Geneva	92.0
		University of Bern	39.0
		University of Zürich	96.0
		University of Lausanne	93.0
		University of Basel	96.0
UKR	Ukraine	National Medical University O. O. Bogomolets	10.0
		Vinnitsya State Pirogov Memorial Medical University	8.0
		Dnipropetrov'sk Medical Academy	8.0
		Donets'k State Medical University	5.0
		Zaporizhzhya State Medical University	9.0
		Ivano-Frankivs'k Medical Academy	7.0
		Crimian State Medical University	8.0
		Lugansk State Medical University	5.0
		Danylo Halytskyi Lviv State Medical University	6.0
		Odesa State Medical University	7.0
		Ternopil' Medical Academy	6.0
		Kharkiv State Medical University	9.0
		Bukovynska Medical Academy	7.0
		Uzhorod State University (Department of Medicine)	6.0
URY	Uruguay	Universidad de la República Oriental del Uruguay	31.0
YUG	Yugoslavia	Medical Faculty of Nis	4.0
		Medical School of Belgrade	25.0
		Medical Faculty of Novi Sad	42.0
		Medical School of Kragujevac	61.0
		Medical Faculty of Podgorica	26.0

IFMSA's activities in the field of ageing

Since the introduction by WHO of "ageing" as a subject of major importance to medical education (during the General Assembly in Monterrey, August 1999), IFMSA has been involved in activities related to ageing. At that occasion IFMSA decided to organise an International Conference on Ageing and Health to take place in Oporto, in August 2000. The conference was developed in collaboration with the WHO Ageing and Life Course Programme, which fully supported this initiative.

The conference brought together about 90 students from over 40 countries. Their studies included medicine, pharmacy, nursing, occupational therapy and psychology. . The main aim of the conference was to raise awareness about the challenges of ageing societies. As an outcome of this conference we created the International Students Network on Ageing and Health (ISNAH): <http://www.isnah.f2s.com/> All follow-up student-activities in the ageing field were performed under the umbrella of this network. ISNAH intends to actively involve students, professionals and educators interested in working in the field of ageing and health.

From August 4-12, 2001, the IFMSA celebrated its 50th anniversary by organising an International Training Congress for Medical Students in Aalborg, Denmark. As part of this event, IFMSA/ISNAH co-ordinated an international workshop entitled "*Ethics of Old Age, an approach towards the Human Rights of Older People*". This workshop was intended to equip medical students with the necessary competence to make sensitive and appropriate decisions in the management of older peoples' health, with them and for them, under the principles of medical ethics. Workshop participants hailed from five different continents, and participated in animated discussions with international experts, Danish NGOs and other organisations. Through a pre-planned series of small group discussions and brainstorming sessions, each participant left the workshop having designed a concrete action plan for a sustainable, achievable project related to the topics discussed in the workshop, to be carried out in his or her home country.



Logo of ISNAH