

# Gerontology and Geriatrics in Dutch medical education

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## ABSTRACT

**Background:** The world population is ageing and healthcare services require trained staff who can address the needs of older patients. In this study we determined how current medical education prepares Dutch students of medicine in the field of Gerontology and Geriatrics (G&G). **Methods:** Using a checklist of the essentials of G&G, we assessed Dutch medical education on three levels. On the national level we analysed the latest National Blueprint for higher medical education (Raamplan artsopleiding 2009). On the faculty level we reviewed medical curricula on the basis of interviews with program directors and inspection of course materials. On the student level we assessed the topics addressed in the questions of the cross-institutional progress test (CIPT).

**Results:** The National Blueprint contains few specific G&G objectives. Obligatory G&G courses in medical schools on average amount to 2.2% of the total curriculum measured as European Credit Transfer System units (ECTS). Only two out of eight medical schools have practical training during the Master phase in the form of a clerkship in G&G. In the CIPT, on average 1.5% of questions cover G&G.

**Conclusion:** Geriatric education in the Netherlands does not seem to be in line with current demographic trends. The National Blueprint falls short of providing sufficiently detailed objectives for education on the care of older people. The geriatric content offered by medical schools is varied and incomplete, and students are only marginally tested on their knowledge of G&G in the CIPT.

## KEYWORDS

Medical education, the Netherlands, Gerontology & Geriatrics

## INTRODUCTION

All around the world, the number of older people will grow.<sup>1</sup> In the Netherlands alone, the population of over 65 year olds will increase from 2.6 million (16% of total population) to 4.4 million (25%) in 2035.<sup>2</sup> Older people are frequent users of healthcare: in 2011, 84% of people aged ≥65 years visited their general practitioner (on average 6.7 times a year per person) and 61% visited a medical specialist (on average 3.5 times a year). There were 18 hospital admissions per 100 over 65 year olds (amounting to 33% of all admissions), and 77% of over 65 year olds used one or more prescribed drugs.<sup>2,3</sup> We therefore expect all future medical doctors to be confronted with an increase – both absolute and relative – in older patients. Due to the frequent occurrence of multimorbidity, older patients require a different approach. Since all medical doctors, both generalists and specialists, will be confronted with the growing number of elderly patients, it is essential that all medical students receive a good basic training in the principles of Gerontology and Geriatrics (G&G).

Previous studies have shown that not all medical schools pay attention to their G&G education.<sup>4-8</sup> In both the UK and USA, undergraduate education in G&G was not offered at all medical schools. In a UK inquiry, G&G courses were offered at 22 of the 23 responding schools (on a total of 31), in a US inquiry 105 of 121 responding schools (on a total of 144) were found to have a 'distinct academic geriatric program'.<sup>4,5</sup> In the UK inquiry, moreover, only 53% of the responding schools had a geriatrics department to promote the presence of geriatrics in the curriculum.<sup>4,9</sup> Furthermore, geriatrics was taught as a separate subject in only two out of 23 schools.<sup>4</sup> Teaching geriatrics as a separate course was found to be a more effective learning experience in a study performed by Duque *et al.*<sup>10</sup> Members of the British Geriatrics Society Education and Training Committee and heads of departments of geriatric medicine

in the UK also consider teaching G&G in a separate course preferable.<sup>4</sup> A recent survey conducted among teachers and students of Nursing in the Netherlands found that students not only lack knowledge of geriatrics but also do not wish to work with older people in their future career.<sup>11</sup> For the medical curricula in the Netherlands, no formal investigation on G&G has ever been conducted. Therefore, we conducted a survey of the current state of G&G education in all medical curricula in the Netherlands. We compared our results with the international literature and make recommendations to prepare the next generation of doctors for their future practice.

## MATERIALS AND METHODS

A task group, including all three professors of geriatric medicine of the Netherlands, different ageing experts and experts in medical education drew up a checklist (*appendix A*) of essential topics in G&G.<sup>12</sup> This checklist resembles the guidelines set out in the British Geriatrics Society (BGS) curriculum and adds several topics agreed upon by the expert panel.<sup>13</sup> Using the checklist as a frame of reference, we analysed G&G education on three different levels: the national level, the faculty level and the student level.

On the national level, we evaluated which G&G topics were included in the latest National Blueprint (Raamplan artsopleiding 2009), established by the Federation of Dutch University Medical Centres (NFU).

On the faculty level, we discussed our checklist with the responsible educational officers of all medical schools. The officers then provided us with course materials that in their respective opinions covered topics on our checklist. To get a complete as possible overview of all topics concerning G&G we included all courses in our study that 1) included topics mentioned on the checklist; 2) included topics designated in the course materials as concerning G&G; 3) included topics that the educational officers of the respective faculties considered G&G.

We examined the available course materials in depth and produced both a qualitative and a quantitative description of the G&G education at every medical school. For the quantitative description we assessed the number of ECTS (European Credit Transfer System units): 1 ECTS equals 28 hours of study load. The number of ECTS for courses partly devoted to G&G was calculated from the percentage of the course devoted to G&G. Stand-alone lectures were not included in the quantitative approach, because these were small in number and their size in ECTS hard to estimate. We made a distinction between both practical and theoretical courses and whether these were offered in the Bachelor or Master phase of the curriculum. The Dutch undergraduate medical curriculum is divided into a Bachelor and a Master phase

of three years each. Each year consists of 60 ECTS, so that the entire undergraduate curriculum consists of 360 ECTS. Generally speaking, the Bachelor phase is the theoretical part of the education (e.g. lectures in auditoria and self-study assignments), while the Master phase offers more practical courses (clinical and scientific internships/clerkships). The distinction between theoretical and practical is important because practical experience is essential to transferring certain knowledge, skills and attitudes. Our initial results were submitted to the responsible educational officers of the faculties for verification and feedback.

Finally, on the student level, we measured the number of questions students had to answer on G&G in the cross-institutional progress test (CIPT)<sup>14</sup> which is taken by students of five of the eight medical schools. In this case, we selected G&G questions if these related to topics on the checklist or when the old age of the patient(s) described in the question was decisive in determining the correct answer.

## RESULTS

### National level

The most recent National Blueprint (Raamplan artsopleiding) was released in 2009. This Blueprint describes, among other things, the competence domains (or CanMEDS-2005 roles) that medical doctors should master. It describes issues in health and disease with which a doctor should be familiar; the requirements of the Bachelor diploma or first years of medical school; basic subjects in the study of medicine; and a number of skills in the practice of medicine. The National Blueprint does not provide an extensive list of G&G topics, but instead only describes several broad terms that the students need to master. On several occasions it is mentioned that students should take age or life phase into account. Elsewhere it is stated that 'it is assumed that particularisation for age and sex is self-evident.' *Appendix B* shows the complete list of all parts of the guideline where G&G is explicitly mentioned.

### Level of the medical school

The G&G courses offered in the medical curricula vary considerably in format (integrated or separate), size, and content. *Figure 1* shows the obligatory education on G&G in the different curricula divided in practical and theoretical courses and in Bachelor and Master courses. Six schools offered practical courses.

In the Master phase, four medical schools offered theoretical courses that mostly resembled the theoretical courses offered in the Bachelor phase by other schools. Two faculties offered practical courses in the form of a clerkship in G&G. In a Dutch clerkship the medical student provides

supervised assistance to a resident in patient care. On a total of 360 ECTS for every curriculum, on average G&G courses amounted to 7.9 ECTS or 2.2%.

All medical schools provided the opportunity to follow elective courses in G&G. The main electives in geriatric education are a scientific internship, a geriatric clerkship, and a semi-resident clerkship. *Figure 2* shows the amount of ECTS that could potentially be spent on G&G for each medical school, again subdivided for Bachelor/Master and practical/theoretical courses. Compared with the obligatory courses, the elective courses show greater homogeneity and greater amounts of ECTS (on average 53) were devoted to G&G. However, each year, only a limited number of students (<10%) are able to participate in a G&G elective course.

### Student level

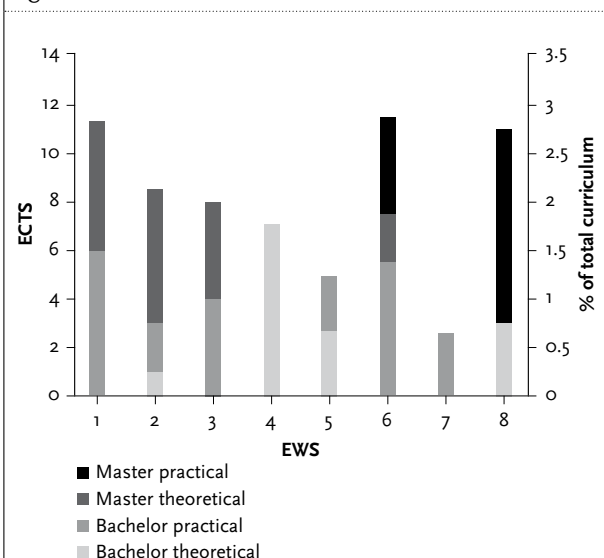
In order to assess the extent to which students are tested on their knowledge of G&G, we analysed the questions of the CIPT.<sup>14</sup> This exam is taken four times a year by all students of five out of eight medical schools and serves as a curriculum transcending test on which students should perform better in each consecutive year. Its questions are divided into mostly specialist categories: respiratory system; blood and lymph system; cardiac system etc. G&G is not among these categories, although there is one category 'life phases/ general'. We analysed five recent exams: those of February 2010, May 2010, September 2010, December 2010, and May 2011. On average three out of 200 questions (1.5%) dealt with G&G.

## DISCUSSION

Geriatric education in the Netherlands does not seem to be in line with current demographic trends. The National Blueprint falls short of providing sufficiently detailed prescriptions for the care of older people. The geriatric content offered by medical schools, probably as a consequence,<sup>6</sup> is varied and incomplete, and students are only marginally tested for their knowledge of G&G. The task group that set up the checklist used to analyse geriatric education was made up of professors of geriatric medicine, ageing experts and experts in medical education from different universities. While having in this way assembled a notable amount of knowledge and experience, other panels including nursing home physicians, general practitioners and internal medicine specialists might have constructed different checklists. However, we believe these lists would have shown considerable resemblance to the current checklist and it would not influence our conclusions.

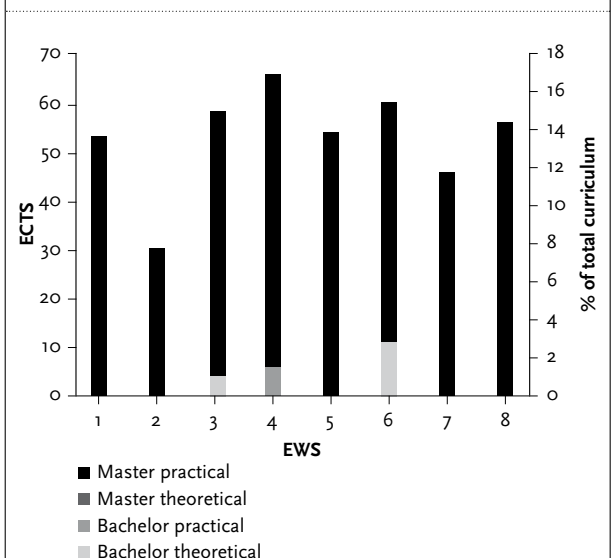
By virtue of the small size of the Netherlands, we were able to analyse the curricula of all medical schools through both interviews and close examination of course materials. Most geriatric content was delivered in separate courses which allowed us to quantify the contribution of G&G in the curriculum, and through the aforementioned examination of the course materials we were, in most cases, even able to assign weight to the integrated contents.

**Figure 1.** G&G education in obligatory courses for all eight Dutch medical schools



ECTS (European Credit Transfer System units) devoted to G&G education in obligatory courses (left y-axis) and as a percentage of the total undergraduate curriculum (right y-axis) for all eight medical schools in the Netherlands (x-axis).

**Figure 2.** G&G education in elective courses for all eight Dutch medical schools



ECTS (European Credit Transfer System units) devoted to G&G education in facultative courses (left y-axis) and as a percentage of the total undergraduate curriculum (right y-axis) for all eight medical schools of the Netherlands (x-axis).

In view of the source material for this study, we will have inevitably overlooked some forms of G&G teaching offered by medical schools, the most important among which may be the skills and attitudes conferred to students by their supervisors in direct contact with older patients. We have examined what students are tested for based on the CIPT. For future research, therefore, it would be interesting to also look at the exams of the individual medical schools. Our results are in line with previous findings.<sup>4,6-8</sup> In the United Kingdom, for instance, the national guidelines from the General Medical Council on training of medical students have been criticised for being too generic and not specific enough on G&G.<sup>15</sup> The British Geriatrics Society (BGS) has devised a list of more detailed learning outcomes for medical students,<sup>13</sup> aiming to improve training in the essentials of G&G. However, UK medical schools fall far short of BGS expectations; a survey undertaken by Gordon *et al.*<sup>16</sup> showed that of 21 of the suggested BGS learning outcomes in G&G, only eight were taught by all medical schools and none of these were examined by all medical schools.

In our opinion, G&G education has to be secured on three levels: the national level, the faculty level, and the individual student level. We recommend to establish detailed national guidelines for the instruction of geriatric medicine to undergraduate students. An alternative could be to leave more room at the level of the medical school, but then another way should be implemented to secure that adequate attention is given to G&G. Concerning the form of education, we recommend that all students follow a clerkship in G&G.<sup>17,18</sup>

Given the special approach, skills and considerations in geriatrics and the large part of their future work devoted to this, we recommend that all medical students receive formal training by geriatricians.<sup>19</sup> The elderly patients treated by the department of internal medicine are interesting case studies, as these often suffer from a multitude of diseases. Specialists in internal medicine could also play an important role in the education of students in the principles of G&G.

Finally, the contents of these curricula should be adequately reflected in the exams that test students for their knowledge of G&G. Students will direct their study efforts towards what is required at examination, so that the contents of the exam determine to a great extent how much knowledge is transmitted.<sup>20</sup>

We realise that geriatrics is not the only medical speciality that wishes to increase its share in the medical curricula. However, we feel that there is a clear and unjust discrepancy between the fact that people aged  $\geq 65$  now account for one third of hospital admissions,<sup>2,3</sup> and that (on average) only 2.2% of the medical curriculum teaches about G&G. Moreover, in light of the ongoing demographic

changes, this discrepancy is likely to increase if appropriate action is not taken.

As ageing populations are a global phenomenon, we would also like to prompt other countries to undertake a survey of G&G in their medical curricula.

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## APPENDIX A

### Checklist of G&G topics

#### Knowledge

*Demography of ageing:*

Demographic transition

Prevalence mortality/disease

*Epidemiology of ageing:*

Epidemiological transition

Causality, causal pie model Rothman

*Psychology of ageing:*

Disability paradox

*Sociology of ageing:*

Life course perspective

Networks

Intergenerational relations

*Ageing international:*

Increase in life expectancy in international perspective

*Work and ageing:*

Disease and disability

Retirement and ageing

*Organisation and structure of elderly care:*

Models of care

Policy, capacity

Costs of elderly care

#### Understanding

*Health and disease from an evolutionary perspective (ultimate explanations):*

Evolutionary theories of ageing

- Life history regulation
- Decrease of natural selection with age (selection shadow)
- Mutation accumulation in the gene pool
- Trade offs
- Antagonistic pleiotropy
- Disposable soma theory

Gene-environment interactions, plasticity

Health and disease from an evolutionary perspective (Stearns)

Clustering of disease

*Biological mechanisms of ageing (proximate explanations):*

Stress and damage (exogenous, endogenous)

Cellular reactions to stress (recovery, senescence, apoptosis)

Physiological reactions to stress (neuro-endocrine regulation)

Homeostasis (retain norm) and allostasis (adapt norm)

#### Practice

*Prevention/ healthy ageing:*

Nutrition

Physical exercise

Changing risk management in the elderly

- Hypertension, dyslipaemia, overweight

Quality of life

*Diagnostics:*

Medical history

Geriatric assessment

Geriatric giants

Clinical (often atypical) presentation of elderly

Additional diagnostics

#### Complex care

*Therapy:*

Multimorbidity

Polypharmacy

Individual therapy

Goals of treatment

Abstention from treatment

Rehabilitation

*Organisation and structure of elderly care:*

Direction

Not one medical specialist, but a medical team

Referral, who is responsible?

*Research in the elderly:*

Inclusion/ exclusion

Guidelines elderly care

Lab values in the elderly

Evidence-based medicine for elderly

*Ageism:*

Elderly abuse

## Geriatrics and Gerontology in National Blueprint (Raamplan artsopleiding) 2009

### *Chapter 6, Competences of the doctor at graduation*

Medical expert, ¶ 6.2.1:

The newly graduated doctor has the ability to

-apply skills regarding (amongst others) diagnosis and therapy taking gender, age, and life phase into account.

Communicator, ¶ 6.2.2:

The newly graduated doctor has the ability to

-adequately deal with diverse patient groups like (...)elderly (...)

-have a conversation with the patient taking the patient's age into account

### *Chapter 7, Issues in health and disease*

¶ 7.1: The doctor should, in determining the diagnostic and therapeutic policy, take (...) contextual factors into account. This goes especially for the significance of life phases, both young age and old age.

¶ 7.2.4: Medicalisation

### *Chapter 8, Bachelor of Medicine: goals and profile*

¶ 8.3.1: The Bachelor of Medicine has knowledge and understanding of

-the genesis and development, growth, sexual maturation and ageing and dying of an organism

-the physiological mechanism of degeneration, wear and ageing and their structural and (patho) physiological consequences

### *Chapter 9, Basic subjects in medical education*

¶ 9.2.2: The newly graduated doctor has knowledge and understanding with regard to

-the genesis and development, growth, sexual maturation and ageing and dying of an organism

-the physiological mechanism of degeneration, wear and ageing and their structural and (patho) physiological consequences

Keywords:

-Molecular and cellular aspects of ageing

-Physiological aspects of tissue and organ ageing and the functioning of an organism

-Pathophysiology of dying and the death of an organism

-Epidemiology of diseases related to old age and death

-The backgrounds to syndromes of premature ageing

¶ 9.3.2: The newly graduated doctor has knowledge and understanding of the normal psychological and social characteristics of man.

Keywords:

- Development in the lifecycle (baby, child (...) elderly)

The newly graduated doctor has knowledge and understanding of the structure of the Dutch society

Keywords:

-Long-term changes (for example the ageing population, immigration)

### *Appendix 3. List of skills*

In principle, every skill is mentioned (only) once. Even skills that have specific applications in for example children/elderly (...). It is assumed that particularisation for age and sex is self-evident.