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Genetics Education for Non-Genetic Health Care Professionals in the Netherlands (2002)

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ABSTRACT

Objective: The aim of the present study was to investigate whether medical care providers in the Netherlands are adequately educated in genetics by collecting information about the current state of genetics education of non-genetics health care professionals. *Method:* The curricula of the 8 universities providing medical education and of all varieties of specialised medical training were examined for the year 2002. *Results:* In most universities, the number of hours spent on genetics education is small, and genetics is relatively invisible, being integrated within several courses, comprising only a small proportion of the total course (a mean of 8%). Only 3 of the programmes for medical specialist training and the training of medical doctors for mentally handicapped people indicated a formal genetics education programme. Continued education courses on genetics are offered irregularly. Training in midwifery involves at least 3 weeks of genetics education. Courses on genetics are offered frequently to practicing midwives. *Conclusion:* There appear to be no general, nationally defined final goals for education in genetics for non-genetics health care professionals in the Netherlands. Furthermore, the lack of visibility of genetics in medical education in the Netherlands was striking.

INTRODUCTION

The present paper reports the Netherlands part of the first phase of GenEd, the aim of which was to collect information about current genetics education of non-genetics health care professionals. In the Netherlands, each inhabitant is registered with a general practitioner (GP) and must consult with the GP before entering the rest of the medical system. The GP thus functions as a 'gatekeeper' and is of particular interest. Figure 1 shows the continuum of medical training in the Netherlands.

[FIGURE 1]

Although recent rapid developments in genetics make it important that medical care providers be adequately educated in genetics and keep abreast of developments, it is not clear how health care professionals are educated in genetics during their basic, specialised and continued medical training. This paper describes the state of genetic education in 2002 but excludes the training of individuals specialising in clinical genetics, laboratory genetics and genetic associates.

METHODS

To obtain an overview of the amount and frequency of genetics education, we examined the curricula of the 8 universities providing medical education by viewing the prospectuses for the year 2002. The information obtained was checked for accuracy with the genetic educators from each medical school (n = 8).

The curricula of all varieties of specialised medical training (n = 32; with the exception of radiotherapy) were downloaded from the internet site of the Royal Dutch Medical Society (Koninklijke Nederlandse Maatschappij voor Geneeskunst, KNMG; <http://www.knmg.nl/>). These documents were searched for the terms 'geneti*' and 'erfelijk*' (which means 'hereditary'). Only 'geneti*' led to results. We also requested information about the amount and frequency of genetics during the 4 years of education programmes from the 3 institutions for midwifery training. Medical education for nurses was not reviewed because nursing is not a self-employing medical profession in the Netherlands.

RESULTS

Basic Medical Education in the Netherlands

The 8 universities that provide (basic) medical education are located in Amsterdam (2 universities), Groningen, Leiden, Maastricht, Nijmegen, Rotterdam and Utrecht. Admission to basic medical training depends on completion of the 'VWO', which is comparable with secondary education (e.g., gymnasium or high school). Basic medical education consists of theoretical and clinical training and is of at least 6 years' duration, with the final 2 or 3 years focusing on clinical training (fig. 1). An education study group of the Department of Medicine of the University of Nijmegen formulated final goals to harmonise the different programmes. The Central Coordination Committee (CCC) made up of representatives of all medical faculties in the Netherlands, the national organisation of internships, the KNMG and the department of Welfare, Public Health and Culture ('Welzijn, Volksgezondheid en Cultuur') guided the study group [1]. The final goals of basic medical training include a list of 328 health issues (problems or symptoms, e.g., headache, birthmark, varicose vein, contraception) divided into 16 (main) categories (e.g., skin, head, reproduction, infants) serving as a starting point for training. Every medical doctor is expected to know how to respond appropriately to these problems, including referring to the right specialist if necessary. Only 5 of the 328 health issues are expressly related to genetics, 2 of which have the word 'genetic' as part of their description. The other 3 are frequently encountered in a genetic context, although genetics is not expressly mentioned. These 5 health issues are listed in table 1.

[TABLE 1]

Although there are some differences, there are also striking similarities in the curricula of the 8 universities providing medical training. In most universities, the number of hours spent on genetic education is small and genetics is relatively invisible, being integrated within several courses (e.g., reproduction, sense organs, developmental disorders), comprising only a small proportion of the total course (1–21%, with a mean of 8%).

Undergraduate medical education is assessed by an examination in year 4 and then the final examinations in year 6. The licence to practice as a medical doctor is regulated by the Individual Health Professions Act ('Beroepen Individuele Gezondheidszorg'), which is linked to a disciplinary code and a description of the field of expertise.

Specialised Medical Training

Preceded by 6 years of basic medical education, admission is possible to 5 areas of specialised medical training: medical specialists, GPs, nursing home medical doctors (MDs), social medicine MDs and MDs for intellectually handicapped people (fig. 1).

The training for medical specialists includes 27 different medical specialities¹, each with its own training programme, requirements and training facilities. The training varies between 4 and 6 years (table 2), and when completed, entry into the register of medical specialists follows and is valid for a period of 5 years, after which re-registration is needed. Only 3 of the programmes for medical specialist training (other than clinical genetics) indicated a formal genetics education programme; these are obstetrics and gynaecology, neurology and paediatrics (table 3).

[TABLE 2 – 3]

Training for GPs lasts 3 years, after which entry into the register of GPs follows. Several of the institutions for general practice at the 8 universities spend some time on genetic education in their GP training programme, but no formal, national regulations were found.

Of the 3 remaining kinds of medical training, only the training of MDs for mentally handicapped people has a formal genetics education programme (table 3).

The approval of training sites, the award of specialist qualifications and professional registration are regulated by the Medical Specialist Registration Committee ('Medische Specialisten Registratie Commissie') for medical specialists and similar committees for GPs, nursing home MDs, and MDs for mentally handicapped people at the national level. However, the curricula and the precise topics taught vary between institutions.

Continued Education

All MDs are expected to follow continuing medical education. Each specialty is responsible for accreditation and prescribes the number of hours needed to re-register. However, specialists are free to choose between accredited courses of continued education, so only few will attend continued education on genetics. Further, courses on genetics, or largely consisting of genetics, are offered irregularly, e.g., by the Boerhaave Committee. Once every 2 years, a 1-day course in paediatric pathology is offered with a large amount of genetic material. In 2002, an inaugural 1-

day course on clinical genetics for gynaecologists and residents in gynaecology was held (table 3). This course was repeated in 2003 and 2004. A course of clinical genetics for cardiologists began in September 2003 and was repeated in 2004. Courses for internists will follow soon.

Midwives

Training in midwifery involves 4 years of theoretical and practical education. It is not university based, being provided by institutions for higher vocational training. One institution has 2 branches and is located both in Amsterdam and Groningen; the other institutions are located in Kerkrade and Rotterdam. Three of the 4 institutions responded to our request for information about genetics content in their education programme and the following data are based on those institutions. In the first year of training, about 1 week is spent on genetics. During the third year, 2 weeks are spent on genetics. Some institutions also offer 2 weeks of practical genetics education in the 4th year of the training. TNO Prevention and Health (TNO is the Dutch organization for applied scientific research) in Leiden is responsible for the continued education of midwives. In 1997, courses of clinical genetics for practising midwives were organised throughout the country and were attended by the majority of midwives.

DISCUSSION

There are limitations to this study in that the genetics education that is actually delivered in practice might differ from the descriptions in the curricula. Furthermore, some institutions appeared to be more informative than others. Paradoxically, the latter might actually be a strength of the study, yielding more information, as a qualitative research method.

There appear to be no general, nationally defined final goals for education in genetics for non-genetics health care professionals in the Netherlands; without such goals, it is hard to achieve comparable programmes in different institutions. More specifically, lack of visibility of genetics may lead students to overlook its importance. One may question whether the current education in genetics is sufficient for medical students and non-genetics health professionals to have acquired adequate knowledge of genetics by the end of their training. As non-genetics health care professionals do not have prescribed continuing education courses other than occasional optional courses, there is little organized continuing medical education to encourage them in keeping up to date with developments in genetics. For example, an investigation of inappropriate referrals by MDs of children born with congenital anomalies [2, 3] justifies the concern that education in genetics is not only invisible, but also insufficient. Concerned about the possible negative effects of the lack of visibility of genetics revealed by the Netherland GenEd work, we are awaiting the results of our study of the knowledge of genetics of medical students at the end of their basic medical training.²

The results of this part of the GenEd study were based on the year 2002 and may have to be reviewed in future years because of the conversion of the present higher education system into a bachelor/masters degree system, and because of the activities planned by the committee for genetic education for non-genetic health care providers of the Dutch Society of Clinical Genetics.

CONCLUSION

The aim of the present part of the GenEd study was to collect information about the genetic education of non-genetics health care professionals in Europe, and the lack of visibility of genetics in medical education in the Netherlands was striking. By direct involvement of non-genetics health care professionals, the next phase of GenEd is to seek to ascertain their needs for genetic education.

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FOOTNOTES

Footnote 1

In fact, there are 29 different medical specialties, but registration for clinical chemists and allergologists is no longer possible.

Footnote 2

Note added in proof: The results of this study have been published in the meantime [4].

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TABLES AND FIGURE

Fig. 1. The continuum of medical education in the Netherlands. During the specialised medical training, one can become specialised in one of the 27 medical specialties (table 2), as a GP, a nursing home MD, in social medicine, or as an MD for the mentally retarded. Those specialised in 1 of the 27 medical specialties are called a 'medical specialist' in the Netherlands. The training of midwives is not university based and lasts 4 years.

Basic medical training	Specialised medical training					Continuing medical education
Preliminary examination after 1 year Examination after 4 years Final examination after 6 years (after 2 years of clinical training)	Medical specialist training (table 2)	Training of GPs	Training of nursing home MDs	Training of social medicine MDs	Training of MDs for mentally handicapped people	Desirable number of hours training for health professionals determined by each specialty
(6 years)	(4–6 years)	(3 years)	(2 years)	(4 years)	(3 years)	

Table 1. List of issues that touch or deal with genetic problems, present in the general list of problems in the framework of final goals for basic medical training in the Netherlands

Category	Health issue (problem or symptom)
<i>Issues directly related to genetics</i>	
Reproduction	request for genetic evaluation
Infants	suspicion of genetic/congenital anomaly
<i>Issues that are frequent in the context of genetics</i>	
General	increased risk (positive test result of screening) request for preventive evaluation request for information

Table 2. Medical specialists in the Netherlands and years of training

Specialty	Period of training, years
Clinical genetics Medical microbiology Nuclear medicine Rehabilitation medicine	4
Psychiatry	4.5
Anaesthetics Clinical geriatrics Dermatology Morbid anatomy and histopathology Ophthalmology Otorhinolaryngology Paediatrics Radiology Radiotherapy	5
Cardiology Cardiothoracic surgery Gastroenterology General surgery General medicine Neurology Neurosurgery Obstetrics and gynaecology Orthopaedic surgery Plastic surgery Respiratory medicine Rheumatology Urology	6

Table 3. Formal genetics education goals that were found in the curricula for specialised medical training

Specialised training	Regulation
Paediatrics	During the training, the trainee is supposed to study the basics of ..., clinical genetics, ... as far as it is relevant to paediatrics
Obstetrics and gynaecology	During the training, the trainee has to acquire knowledge in ... clinical genetics
Neurology	During the training, the trainee has to acquire knowledge about the neurological aspects of ... and genetics
Training of MDs for mentally handicapped people	The MD for mentally handicapped people is familiar enough with other specialties, particularly ... clinical genetics ... to be able to consult or refer adequately There are 6 possibilities for practical training, amongst which is the Department of Clinical Genetics, oriented on molecular genetics