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Recommendations on higher education qualifications for the healthcare system

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Preliminary remarks

On 2 July 2010 the German Council of Science and Humanities incorporated the subject of “Higher Education Qualifications for the Healthcare System” into its work schedule and instituted an “Extended Medical Committee” which it tasked with preparing corresponding recommendations. Thus it examined the question of which skills for future healthcare provision need to be taught in the study courses that are relevant to the health professions, and, in this context, how qualification paths at German higher education institutions should be structured for this purpose.

This question primarily concerns the spectrum of teaching, studying and training in the field of university medical studies and health sciences in Germany, concerning which the Council has repeatedly expressed its opinion and issued recommendations over the course of its existence. |¹ In addition, the Council has many times voiced its views on teaching and studying at German higher education institutions. |²

|¹ Cf. the following recommendations from the last 20 years: Wissenschaftsrat: *Leitlinien zur Reform des Medizinstudiums* (= special volume). Cologne 1992; Wissenschaftsrat: *Stellungnahme zur Entwicklung der Hochschulmedizin*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen* 1995, vol. 1, pp. 77–99; Wissenschaftsrat: *Stellungnahme zu den Perspektiven des Faches Allgemeinmedizin an den Hochschulen*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen* 1999, pp. 279–322; Wissenschaftsrat: *Empfehlungen zur Struktur der Hochschulmedizin. Aufgaben, Organisation, Finanzierung* (= special volume). Cologne 1999; Wissenschaftsrat: *Empfehlungen zu forschungs- und lehrförderlichen Strukturen in der Universitätsmedizin* (= special volume). Cologne 2004; Wissenschaftsrat: *Empfehlungen zur Weiterentwicklung der Zahnmedizin an den Universitäten in Deutschland*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen* 2005, vol. 2, pp. 267–330; Wissenschaftsrat: *Stellungnahme zu Leistungsfähigkeit, Ressourcen und Größe universitätsmedizinischer Einrichtungen*, in: *ibid.*, pp. 331–438; Wissenschaftsrat: *Allgemeine Empfehlungen zur Universitätsmedizin* (= special volume). Cologne 2007; Federal Ministry of Education and Research, German Research Foundation, Wissenschaftsrat: *Kernforderungen Hochschulmedizin der Zukunft: Ziele und Visionen für die klinische Spitzenforschung*, Berlin 2004, <http://www.gesundheitsforschung-bmbf.de> (12 July 2012).

|² Cf. recently in particular: Wissenschaftsrat: *Empfehlungen zur Qualitätsverbesserung von Lehre und Studium* (= special volume), Cologne 2008.

The Medical Committee based its deliberations on external studies and its own analyses as well as on discussions and interviews with academic stakeholders and science and health policy actors in Germany and other countries. |³ The Council thanks all discussion partners for their involvement in the development of these recommendations.

In addition to members of the Medical Committee, the “Extended Medical Committee” also included persons whose expertise was of great importance in producing these recommendations. The Council of Science and Humanities owes them a particular debt of thanks.

The Council adopted these recommendations on 13 July 2012 in Berlin.

|³ In this connection, the Council wishes to thank the Robert Bosch Stiftung for funding a study trip to Sweden to Karolinska Institutet and Linköping University.

Summary

These recommendations deal with the question of which higher education courses and qualifications will be needed in future in addition to or to enhance existing offerings, and how these should be designed to respond in an appropriate way to changes in healthcare needs that are foreseeable or already taking place, and ensure the quality of healthcare provision. Apart from the traditionally academic medical professions, the focus here above all is on those healthcare professions for which the first undergraduate courses have already been set up – at least on a model basis – and which are therefore undergoing a process of academisation. These include nursing care (including care of the elderly), physiotherapy, occupational therapy, speech therapy and midwifery.

The healthcare system faces major challenges in the years ahead. Far-reaching changes in healthcare needs can be expected as a result of **demographic change**. The increase in the proportion of older people means a growing number of multimorbid, chronically ill patients requiring care. Added to this are **epidemiological changes**, which are unrelated to demographic trends. Thus, for example, an increase in chronic diseases is seen among younger people as well. Together, these developments are causing a **quantitative expansion and qualitative change in healthcare demands**. Critical importance attaches here, in particular, to multisectoral and interdisciplinary care at the interfaces between the various healthcare professions. Another important development is the increasing **complexity** of healthcare, which results from medical advances and the associated development of new possibilities in terms of diagnosis, treatment, prevention, rehabilitation and care. Firstly, this development is causing progressive professional differentiation, which is seen for example in the medical field in the increasing possibilities for specialist training, and in the care sector in the emergence of specialised areas of activity (such as in oncology and neonatology). Secondly, this situation creates new requirements for interprofessional cooperation between healthcare professions in general.

The developments outlined above have far-reaching consequences for the division of labour in the healthcare system. Greater **cooperative organisation of healthcare provision** as a whole is needed. In particular, not only shall members of the healthcare professions perform increasingly more complex tasks,

they shall also to a certain extent carry out some tasks that were previously performed by doctors. Change in the division of labour in turn affects **future qualification requirements and qualification paths** in healthcare professions. In addition to new specialist skills – relating for example to the increasing technologisation of healthcare – general skills relevant to all healthcare professions should also be mentioned, such as **interprofessional collaboration**. This is particularly clear with regard to the healthcare professions. In certain fields – e.g. patient education and counselling, healthcare with increased technological assistance and care management – specialist nursing, therapeutic and midwifery personnel already perform highly complex tasks; a further increase in complexity is foreseeable. In view of this development, the Council considers it increasingly important that members of the healthcare professions entrusted with particularly complex tasks are able to reflect on their own actions relating to nursing, therapy or midwifery on the basis of scientific knowledge, critically examine the available care and therapy options with regard to their evidential basis, and adapt their own behaviour accordingly.

Against this background, the Council is of the opinion that further development of the training at vocational schools which is usual for the healthcare professions is not sufficient to teach the necessary skills and competencies. The Council therefore recommends **that specialist personnel who work in complex fields of activity in nursing, therapeutic professions and midwifery should in future be trained at higher education institutions**. Training at higher education institutions should primarily take the form of patient-oriented courses for which no prior training is required, which lead to a bachelor's degree enabling the holder to work directly with patients. Given the usual size of multidisciplinary teams, the Council considers it advisable for 10 to 20% of each cohort of students in the healthcare professions observed here to gain academic qualifications. Moreover, courses should be developed which offer attractive further academic education opportunities to trained, experienced personnel for specialised patient-oriented tasks and for activities in teaching and health management.

More of the necessary student places should be created at publicly funded higher education institutions and at universities than is currently the case. The Council points out that the basic funding available to the higher education institutions and the contributions of the Länder for the university medical faculties are not sufficient to create the required number of student places for training in the healthcare professions at higher education institutions. Given this fact, the Council considers it necessary to make the required funding available for the academisation of the healthcare professions which is recommended here.

With regard to **medical and dental training**, the Council notes that on the whole, a scientific course of studies and research-based teaching prepare gradu-

ates well for the requirements of professional practice. Nevertheless, the Council sees significant opportunities for improvement, particularly with regard to greater opportunities to choose individual areas of specialisation, making courses more competency-oriented, problem-oriented and patient-centred, and giving a greater weighting to teaching scientific working methods.

In the interests of interprofessional training that provides suitable preparation for working in a healthcare system which is collaboratively organised and has a high division of labour, the Council attributes great importance to linkages between qualification paths for all the professions considered here. There are two models in particular which it regards as being suitable for achieving this goal. The **integrative model** envisages placing newly created nursing, therapy and midwifery courses at universities under the umbrella of a department of health sciences which is affiliated to the university medical faculty. Newly created courses at universities of applied sciences should be placed in a faculty of health sciences and cooperate closely with a university that has a medical faculty. |⁴ With this model, the Council argues for the establishment of a **health campus** to enable teaching across higher education institutions and faculties.

For the formation of independent scientific disciplines in the field of the healthcare professions, the establishment and development of genuine **research** and the creation of **scientific career paths** is necessary. In nursing, therapeutic and midwifery science, in the Council's view there is still a great need for development in this regard. The development of independent research programmes should be pursued in close interaction with university medical faculties and other relevant university departments.

|⁴ The same applies to courses that are set up at *Duale Hochschulen*, i.e. universities which integrate academic studies and training on-the-job in companies. *Duale Hochschulen* as a separate type of university currently exist only in the state of Baden-Württemberg.

Recommendations

These recommendations centre on the question of what qualifications are needed for future healthcare provision and how the existing qualification paths at higher education institutions can be developed further or in some areas created for the first time. Since the higher education fields that are relevant in this context are closely associated with the healthcare system, the Council can only answer this question sufficiently if key developments and conditions in the healthcare system are taken into account. If all these developments are seen in context, it becomes clear that a purely quantitative increase in healthcare services will not be sufficient to respond appropriately to the new demand situations, which are also qualitatively different. Rather, what is required is for members of the healthcare professions to gain a **qualification which is adapted to the changed requirements**, along with a greater degree of **collaborative organisation in healthcare** in general. Here it is the Council's opinion that there is a considerable need for change particularly in the healthcare professions, in which not only the development of increasing complexity in traditional tasks ("doing things differently") but also a progressive trend towards carrying out new tasks which in some cases were previously performed by doctors ("doing different things") can be observed. In the international context, in many places these trends are already significantly more advanced than in Germany.

In light of this, in the following, the Council will

- 1 – make assessments of future qualification requirements in the healthcare professions resulting from changes in healthcare needs due to demographic and epidemiological trends;
- 2 – give recommendations on future qualifications for healthcare professions, and therefore on the structural development of health-related disciplines in respect of their training activities;
- 3 – take the relationship between training and research into account and formulate recommendations to promote scientific career paths in health-related disciplines.

I.1 Future qualification requirements and qualification paths in the healthcare professions

Changes in healthcare needs resulting from demographic and epidemiological change together with medical and technological advances and the consequences of these developments have far-reaching implications for future qualification requirements and qualification paths in the healthcare professions. In addition to new specialist skills – relating for example to the increasing technologisation of healthcare – general skills relevant to all healthcare professions should also be mentioned. In this context, the Council considers it necessary that in future some members of the healthcare professions shall also be provided with the ability to reflect on their own activities in the field of nursing, therapy or midwifery on the basis of scientific knowledge, critically examine the available care and therapy options with regard to their evidential basis, and adapt their own behaviour accordingly. Growing complexity increasingly requires what are referred to as “reflective practitioners”. **Interprofessional collaboration in multidisciplinary teams** is a skill which is also gaining in importance.

The Council is of the opinion that further development of existing vocational training options is not sufficient to provide those employees in the healthcare professions who are entrusted with particularly complex tasks with appropriate qualifications for their jobs. Rather, the Council considers that training at higher education institutions is necessary in order to teach the necessary skills and competencies. The Council therefore recommends **that specialist personnel who work in complex fields of activity in nursing and therapeutic professions and midwifery should in future be trained at higher education institutions**. The Council advocates the expansion of higher education training courses for the healthcare professions considered as priorities here: nurses, physiotherapists, occupational therapists, speech therapists, and (male and female) midwives. The Council is aware of the fact that other fields not covered in more detail here – such as medical technical assistants in particularly complex working environments – could benefit from a similar academisation process. |⁵

With regard to the medium and long-term development of the healthcare professions, the Council points out that the academisation of healthcare profes-

|⁵ Cf. for the field of technical assistant professions: Deutsches Krankenhausinstitut: *Weiterentwicklung der nicht-ärztlichen Heilberufe am Beispiel der technischen Assistenzberufe im Gesundheitswesen. Forschungsgutachten im Auftrag des Bundesministeriums für Gesundheit*, Düsseldorf 2009.

sions which is recommended here involves more than setting up new study courses. For the **formation of independent scientific disciplines**, it is also essential to establish and develop genuine **research** that is sufficiently distinguishable from other disciplines and to create **scientific career paths** (see III).

With regard to **medical and dental training** together with research and the further development of scientific career paths, the Council also sees a need for change (see II.2, III).

The Council considers it necessary as an overarching task to improve coordination between higher education qualification paths in the healthcare professions and to interlink them with elements of **interprofessional training** in such a way as to ensure that graduates are appropriately prepared for work in a collaboratively organised healthcare system with a high division of labour.

Before formulating separate recommendations below for the development of higher education qualification paths and their interprofessional linkages, for research and for scientific career paths in the healthcare professions (see II and III), the ability to cover staffing needs in the healthcare system is discussed briefly.

1.2 Assessments of personnel requirements in the healthcare system

The Council points out that the healthcare system in Germany, which is organised according to self-management principles, can only function adequately if a solid empirical basis can be made available for the necessary decentralised decision-making by individual actors. The fact that this does not exist in every respect and, moreover, that the available primary data are not always properly used, has been mentioned occasionally in debates in recent years. It is therefore necessary to improve **healthcare reporting** in such a way that meaningful statistics are uniformly collected and made available in a transparent way. This particularly applies to data collected by healthcare actors themselves, as is characteristic of the requirements planning regulated by § 99 of the German Social Security Statute Book V (*Sozialgesetzbuch, SGB V*). The Council considers it essential that the primary data relating to the healthcare system and its collection should be monitored independently of the self-management actors. In addition, it urges all actors to exercise proper care in handling such socially relevant primary data.

With regard to personnel requirements for the healthcare professions, the Council considers it necessary to distinguish between **replacement needs** as a result of personnel developments in the individual healthcare professions, particularly due to ageing, and **additional needs** owing to increased healthcare requirements, particularly as a result of demographic and epidemiological changes. If this methodological distinction is followed, the obvious conclusion is that

the replacement needs can probably be covered in nearly all healthcare professions, and that a general shortage of skilled personnel due to ageing is not expected. However, there are distribution problems in a number of areas. In respect of medical care, greater attention should be given in future to demand-oriented distribution in rural and urban regions. In particular, ensuring that care is available close to the home in less populated regions is a challenge in terms of allocating trained personnel. |⁶ This is illustrated particularly clearly by the example of regional differences in medical care: in addition to areas that have good healthcare provision or even excess capacity, there are also regions today (mostly but not only in rural areas) that have inadequate provision. |⁷ Developing suitable mechanisms for managing provision here is an urgent task, but it is not the focus of these recommendations.

Thus, while it can be assumed that the anticipated replacement needs in the healthcare professions can be covered, there is still a possibility that the foreseeable additional need for healthcare services could lead to a shortage of skilled workers in the healthcare system. Whether this situation arises will depend on a large number of factors.

II RECOMMENDATIONS ON QUALIFICATIONS FOR HEALTHCARE PROFESSIONS AT HIGHER EDUCATION INSTITUTIONS

II.1 Recommendations on higher education qualifications for the healthcare professions

Given the **increasing complexity** which is observed in many areas of healthcare provision, a changing **division of labour**, and the growing importance of **inter-professional collaboration**, the Council considers that members of the healthcare professions who are entrusted with particularly complex tasks involving a high level of responsibility should preferably be trained at higher education institutions. **Course capacities** that are relevant to the healthcare professions are already available in Germany. The overwhelming majority of the relevant study courses are based in universities of applied sciences. Compared to the training offered at vocational schools, the available courses are limited in

|⁶ See also Wissenschaftsrat: *Trends der Hochschulmedizin in Deutschland. Bericht des Vorsitzenden zu aktuellen Tendenzen im deutschen Wissenschaftssystem*, Berlin 2010, <http://www.wissenschaftsrat.de> (31 August 2011).

|⁷ See Greß, S., Stegmüller, K.: *Gesundheitliche Versorgung in Stadt und Land – Ein Zukunftskonzept. Expertise für die Friedrich-Ebert-Stiftung*, published by the Hesse state office of the Friedrich Ebert Foundation, Wiesbaden, 2011, pp. 7-21.

number but rapidly growing. At first, the courses that were set up exclusively required an existing professional qualification. Undergraduate courses with the possibility of obtaining a vocational bachelor's degree have existed only for a few years. These include courses for which prior training is not required and therefore no longer necessarily require parallel or previous training at vocational schools (courses with integrated training) and which are the sole responsibility of higher education institutions, which have existed in nursing since 2003 and in physiotherapy, occupational therapy, speech therapy and midwifery since 2009. Here it should be noted that only some of the courses offered have a directly patient-oriented training goal. Such undergraduate patient-oriented courses should be distinguished in particular from courses in the fields of nursing education, care management and public health. They are almost exclusively provided by universities of applied sciences.

The Council regards the existing study programmes as a starting point for adequate qualification of the necessary specialist personnel in complex task areas in nursing and therapeutic professions and in midwifery. The processes of academisation which have taken place offer starting points for the creation of new qualification paths at higher education institutions, but they are not sufficient. To satisfy the professional qualification requirements for particular task areas in nursing, therapeutic professions and midwifery, in particular there should be an expansion of undergraduate course offerings that have the exclusive goal of patient-oriented training. |⁸ The Council therefore recommends the **expansion of undergraduate courses leading to a bachelor's degree in nursing, therapeutic or midwifery science that enables the holder to work directly with patients.**

At the same time, the Council advocates designing these new study courses so that **prior vocational training is not required.** On this point, the Council differs from the recommendations of the German federal and state working group on the development of the nursing professions (*Bund-Länder-Arbeitsgruppe Weiterentwicklung der Pflegeberufe*), which also calls for the creation of academic qualification paths but supports a structure in which vocational training is integrated. |⁹ It is the opinion of the Council that study courses for which prior vocational training is not required offer a number of important advantages over

|⁸ With regard to nursing training, the German Advisory Council on the Assessment of Developments in the Healthcare System comes to the same conclusion (German Advisory Council on the Assessment of Developments in the Healthcare System: *Wettbewerb an der Schnittstelle zwischen ambulanter und stationärer Gesundheitsversorgung*. Special report 2012, Bonn 2012, p. 43).

|⁹ Bund-Länder-Arbeitsgruppe Weiterentwicklung der Pflegeberufe: *Eckpunkte zur Vorbereitung des Entwurfs eines neuen Pflegeberufegesetzes*, 1 March 2012, pp. 27-30, <http://www.bmg.bund.de> (4 June 2012).

courses with integrated vocational training. First of all, studying on courses for which prior vocational training is not required at higher education institutions and the practical institutions with which they cooperate has a dual structure, whereas courses with integrated vocational training have a tripartite structure as a result of the additional involvement of the vocational schools. The Council considers it important in the interests of problem-oriented and patient-centred training that practical study should continue to occupy a key position in the curriculum and take place in practical institutions relevant to the profession (hospitals, surgeries, health centres, etc.). More practical course content should also be taught at the higher education institutions themselves, for example in small groups and through skills lab training.

With regard to study courses in nursing, therapeutic and midwifery sciences, it is also noted that the current tying of practical training in courses for which prior vocational training is not required to the requirements of the laws governing these professions, which also apply to training at vocational schools, is a hindrance to the development of scientific study courses. Theoretical teaching is also specified in too much detail, as a result of which, in some cases, it does not correspond to what is generally understood by the teaching of scientific competencies. In this case – as is recommended for medical and dental training – the curriculum should be organised not in individual teaching units but in multidisciplinary, coordinated teaching modules. For this to happen, higher education institutions should be given greater freedom in the design of curricula. Hence the Council recommends that courses for which prior vocational training is not required in the field of the nursing and therapeutic professions and midwifery should be more closely oriented to the skills being taught and, in this context, **greater scope should be allowed for deviating from the requirements for training at vocational schools**. The relevant authorities in the Länder should then make greater use of this opportunity than is currently the case when conducting individual reviews of study courses. The current requirement to demonstrate that the fundamental training goal as applicable to the vocational schools is also met by the higher education institutions can be dropped. The Council hopes that by allowing greater scope in the design of study courses in this way, a greater number of courses for which prior vocational training is not required can be offered, in contrast to current practice. Compatibility with European study courses should be ensured. Quality assurance for the study courses, as in other subjects, should primarily be carried out by the higher education institutions themselves. Furthermore, the course should enable students to take a state-certified examination.

The Council suggests that in future it should be ensured that there is an appropriate level of participation by higher education institutions and scientific actors in German federal and state working groups and commissions dealing with

the development of qualification paths for nursing and similar healthcare professions.

The vast majority of existing study courses are offered by universities of applied sciences, a number of which are privately funded. Therefore the Council considers that the recommended study courses for which prior vocational training is not required should be established in greater numbers than is currently the case **at publicly funded higher education institutions and certainly also at universities** in order to ensure appropriate integration into a broad spectrum of subjects that includes the relevant related disciplines. Higher education institutions and science and health policymakers should coordinate their development plans across the Länder. The training goals should be uniformly regulated throughout Germany in the laws governing the professions; existing patient-oriented study courses should be adjusted and harmonised in respect of these goals. The Council hopes that the firmer establishment of these study courses at universities will give an impetus to research and hence also to research-based teaching. This is discussed in more detail in III.

The Council considers it important that nursing, therapeutic and midwifery science courses should not be developed in isolation from each other; much more attention should be given to the similarities between them than is the case in vocational education. Therefore the Council recommends **interlinking the study courses** in terms of content and structure with the aim of giving greater overall weight to teaching interprofessional skills. The new study courses in all three fields should therefore be set up under one institutional roof at higher education institutions, and the curricula should be clearly interlinked with one another. To enable interprofessional training that includes medicine, it would be appropriate also to set up nursing, therapeutic and midwifery science courses at universities which have a medical faculty. Insofar as it is planned to base study courses at a university of applied sciences, it should cooperate closely with a university that has a medical faculty. The Council discusses interprofessional linkages across all qualification paths for academic healthcare professions in a separate section below (see II.3).

The Council holds the opinion that training at a higher education institution is not necessary for all members of the healthcare professions, nor is it likely to be necessary in future. |¹⁰ Particularly with regard to the demand for healthcare

|¹⁰ Similar conclusions were reached in a study carried out by the Deutsches Krankenhausinstitut (DKI) on behalf of the German Federal Ministry of Health that considered the development of the technical assistant professions. – Deutsches Krankenhausinstitut: *Weiterentwicklung der nicht-ärztlichen Heilberufe am Beispiel der technischen Assistenzberufe im Gesundheitswesen. Forschungsgutachten im Auftrag des Bundesministeriums für Gesundheit*, Düsseldorf 2009, particularly pp. 176-180.

services – which not least is also growing quantitatively – **personnel who are trained at vocational schools are of key importance**. Hence there must be **continued improvement** in training at vocational schools: theoretical and practical teaching at vocational schools is heterogeneous and is frequently regarded as no longer being contemporary. The vocational schools will only be able to perform their important role in the overall education system on a lasting basis if they constantly evolve and embrace relevant changes in the healthcare system. In this regard, the fact that at the present time only a comparatively small proportion of teaching staff at vocational schools have a degree-level qualification should be viewed critically. The Council points out that the academisation of some employees in the healthcare professions as recommended here can make a significant contribution towards ensuring better qualified teaching staff at vocational schools and hence to professionalisation of these institutions.

In view of the foreseeable demand for services and the increased complexity of roles in nursing and therapeutic professions and midwifery, the Council considers it advisable for between 10 and 20% of each cohort of students in the nursing and therapeutic professions and in midwifery to receive training at higher education level. This percentage is referred to below as an **academisation ratio of between 10 and 20%**. This target range is essentially based on the assumption that a typical multidisciplinary team of five to ten persons should include one person who is a more highly qualified specialist. The Council acknowledges that this recommended academisation ratio is merely an initial target range that seems plausible based on current data; it should be regularly reviewed to ensure it is up to date.

Based on this target academisation ratio, the following course capacities should be established:

_ In the **nursing professions**, there are around 21,000 graduates from vocational schools each year (☞ Table 2). In addition, there are some 600 student places on patient-oriented study courses; no exact figures are available concerning the number of graduates from these courses (☞ Table 4 and Table 5). Total training capacity in this field is therefore estimated at approximately 21,600 graduates per year. Accordingly, to achieve an academisation rate of 10 to 20% – assuming that around 20% of students do not complete their studies |¹¹ – between 2,700 and 5,400 student places on undergraduate courses in patient-oriented nursing are needed. Hence between 2,100 and 4,800 new student places are required.

|¹¹ Heublein, U., Schmelzer, R., Sommer, D.: *Die Entwicklung der Studienabbruchquote an den deutschen Hochschulen. Ergebnisse einer Berechnung des Studienabbruchs auf der Basis des Absolventenjahrgangs 2006*, published by Higher Education Information System (HIS), Hanover 2008, p. 3.

- _ In **physiotherapy, occupational therapy and speech therapy**, there are around 7,600 graduates from vocational schools each year (☞ Table 3). In addition, around 1,100 student places were set up at higher education institutions in 2010 (☞ Table 6 and Table 7). Thus the total annual training capacity amounts to around 8,700 specialists. Therefore, to achieve the target admission rate – again assuming that about 20% of students do not complete their studies – between 1,100 and 2,175 student places are necessary. Thus there is a need for up to 1,075 new student places.
- _ In the field of **midwifery**, there were in total around 500 graduates from vocational schools in the 2008/2009 school year. The number of student places is estimated at a maximum of 100 (☞ Table 6 and Table 7), and so the training capacity amounts to around 600 specialists each year. Accordingly, to achieve the target range – again assuming that around 20% of students do not complete their course – between 75 and 150 student places and hence up to 50 new student places on undergraduate courses in patient-oriented midwifery are needed.

With regard to the additional course capacities that need to be created, it should be noted that the figures given here for the number of existing student places involve some uncertainty. This is partly due to the fact that the patient-oriented courses in nursing, therapeutic and midwifery science which are relevant in this context cannot be clearly separated from courses that are not directly patient-based. The Council considers there to be an urgent need for a corresponding level of specification in educational reporting. Secondly it should be pointed out that the course offerings for the healthcare professions are undergoing a dynamic development process. Therefore, when planning new courses, the Länder should determine the current number of student places on patient-oriented courses that are offered at that time; the figures provided here are simply an estimate intended to show the approximate order of magnitude of existing requirements.

In the medium term, in addition to undergraduate courses, **master's courses** should also be set up for suitably qualified applicants. This requires the successful development of the bachelor's degree courses mentioned above. In the field of **nursing science**, the Council sees sufficient academic potential for setting up master's courses, particularly with regard to training clinical nurse specialists and qualifying nurse specialists for primary care and community and home care (for example in programmes for nurse practitioners or community care nurses). In the **therapeutic professions** (physiotherapy, speech therapy and occupational therapy), consecutive master's courses should also be established to teach clinical and research-based expertise for directly patient-oriented work.

In addition, master's courses should provide opportunities to qualify for teaching work, particularly as a teacher in vocational schools, or for work in health

management. Here it would be useful to organise such non-patient-oriented courses jointly for all fields in the healthcare professions, as currently happens at institutes for health sciences and public health. The Council currently sees **no need** to establish such **master's courses in the field of health management and interprofessional public health** since a large number of corresponding courses already exist. Furthermore, all master's courses, as in all other fields of study, should enable consolidation of scientific study and progression to a doctorate.

Moreover, courses should be developed which offer attractive further academic education opportunities to trained, experienced personnel for specialised patient-oriented tasks and for activities in teaching and health management.

In this regard, the Council emphasises **life-long learning** and appropriate **permeability** between the various qualification stages, which is particularly important in view of the progressive differentiation of professional fields of activity and the establishment of new academic disciplines, which is only just beginning. It also points out that the partial academisation of the healthcare professions may help to make these professions more attractive to subsequent generations.

For the purpose of establishing additional study courses for which prior training is not required, the Council recommends that the model clauses in the laws governing the professions should be extended in the context of the evaluation by the German Federal Ministry of Health which will take place in 2015 at the earliest, and that the evaluation criteria in general should be oriented to these recommendations. For its part, the Council reserves the right to review the status of implementation of its recommendations after five years as part of a systematic follow-up and to issue further recommendations if necessary. At the same time it is keeping open the option of including the medical-technical assistant professions, which are not considered in these recommendations but which are also eligible for academisation. |¹²

II.2 Recommendations on the qualification of doctors and dentists

In the context of its recommendations on higher education qualification paths for the healthcare professions, the Council reaffirms its earlier recommendations on the development of training in human medicine and dentistry. Medical

|¹² On the question of the development of training in these professions, see Deutsches Krankenhausinstitut: *Weiterentwicklung der nicht-ärztlichen Heilberufe am Beispiel der technischen Assistenzberufe im Gesundheitswesen. Forschungsgutachten im Auftrag des Bundesministeriums für Gesundheit*, Düsseldorf 2009.

and dental care requirements have steadily increased over time owing to the trends described above. However, the Council believes that at the present time, in general, **scientific study programmes and appropriately research-based teaching at a high level** mean that doctors and dentists are well prepared for requirements in healthcare and the development of professional demands in the course of professional practice. In recent years, the university medical faculties and university hospitals have proven to be highly adaptable and effective in respect of studying and teaching. In particular, study courses in human medicine have been continuously adapted to the needs of healthcare provision. Nevertheless, given the qualitative and quantitative increase in healthcare demands, the Council believes there is a need for further development of study courses in human medicine and dentistry in the years ahead. It has already made suggestions in this regard in earlier recommendations, which tie in with what is said below. |¹³

In general, due to emerging healthcare needs, the **medical profession** is facing considerable **differentiation pressure** in some areas. Today, studies in human medicine already have to qualify students for a broad potential range of activities. This range of activities will become even broader in future, firstly due to the growing importance of more generalist competencies, for example in respect of general practitioner care, and secondly because of more specialist competencies, for example relating to clinical research. The Council raises the point that if the uniformity in principle of studies in human medicine is assumed, then continuing differentiation in the range of medical activities can only be accommodated subject to certain conditions. It therefore sees a fundamental need for further development of studies in human medicine.

The **dental profession** does not face the same differentiation pressure. However, in this case there has **not been any recent significant modernisation of courses**. Therefore the Council considers it important to apply the following individual recommendations to courses in dental medicine as well.

Concerning the structural development of medical and dental qualifications, the Council issues the following **individual recommendations**:

|¹³ Wissenschaftsrat: *Empfehlungen zu forschungs- und lehrförderlichen Strukturen in der Universitätsmedizin*, Cologne 2004, pp. 71–73; Wissenschaftsrat: *Empfehlungen zur Weiterentwicklung der Zahnmedizin an den Universitäten in Deutschland*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen* 2005, vol. II, pp. 267–330, particularly pp. 298–310; Wissenschaftsrat: *Stellungnahme zur Gründung einer Universitätsmedizin an der Carl von Ossietzky Universität Oldenburg nach dem Konzept einer "European Medical School Oldenburg-Groningen"* (Drs. 10345-10), Lübeck 2010, pp. 91–97; Wissenschaftsrat: *Stellungnahme zur Weiterentwicklung der Universitätsmedizin in Schleswig-Holstein* (Drs. 1416-11), Berlin 2011, particularly pp. 9–11; Wissenschaftsrat: *Stellungnahme zur Weiterentwicklung der Universitätsmedizin in Hamburg* (Drs. 1016-11), Berlin 2011, particularly pp. 12–14.

1 – In accordance with the provisions of the licensing requirements for medical doctors and dentists, curricula in human and dental medicine are strongly orientated to individual subjects. To avoid redundancies in terms of content, to combine course content from different fields – for example relating to particular organs or diseases – and to improve the overall functional coordination of teaching units, the Council recommends greater organisation of teaching units into **modules**. It should be ensured here that the modules are not too fragmented.

2 – As a result of the subject-oriented provisions of the licensing requirements for medical doctors and dentists, the prescribed mandatory part of the courses is very large. The Council recommends that **opportunities to choose individual areas of specialisation** should be created on a more systematic basis than is currently the case. Key importance is attributed to the development of a National Competency-based Learning Objectives Catalogue in Medicine (*Nationaler Kompetenzbasierter Lernzielkatalog Medizin*, NKLM) and the equivalent for dentistry (*Nationaler Kompetenzbasierter Lernzielkatalog Zahnmedizin*, NKLZ) in the definition of a core curriculum.

3 – The traditional subject orientation follows the idea that the course of study is determined by learning content. In contrast, in the recent past orientation to learning objectives and hence to the outcomes of curricula and their contribution to life-long learning has gained in importance. Here the Council sees an important opportunity to implement **competency-based study programmes** in medicine and dentistry. With this kind of study programme, the extent of course achievements is not determined solely by attendance times as the actual amount of work that students have to do in order to successfully complete a teaching unit is also taken into account.

4 – In human medicine, various approaches have been taken in the past to better connect preclinical and clinical course content. An important step in this respect was the 2003 amendment to the licensing requirements for medical doctors and the enabling of model study programmes in which the first section of the medical licensing examination (M1) can be omitted and the corresponding programme achievements examined at a later point in time. The Council sees the **problem-oriented and patient-centred learning** which this promotes as being a great step forward. In dentistry also, clinical content should be integrated into the curriculum at an earlier stage and elements of problem-oriented learning should be used systematically. In addition, interprofessional learning should be firmly established in medicine and dentistry.

5 – Efforts to make study programmes problem-oriented and patient-centred were and are important; however learning and practising scientific working methods during the course is of no lesser importance. The Council sees an ur-

gent need for curricula to have a greater focus on **teaching scientific working methods** – also outside of clinical contexts – than is currently the case. The aim of this is to enable graduates, in the future also, to examine their own actions in practice situations – which will become increasingly complex – in terms of their evidential basis, to use medical innovations, and to make their own contributions to medical progress. To this end, the Council recommends the introduction of a study path extending throughout the entire study programme which promotes independent scientific work. This scientific study path should be an integral part of the core curriculum. Additional elective areas should enable students with a particular interest in research to consolidate scientific competencies at an early stage.

6 – In university medicine, instruments for performance-based resource allocation are now an integral part of quality assurance and management. The Council has repeatedly said that in the case of performance-based resource allocation, in addition to research performance, teaching performance should also be taken into account. This is already practised in a number of faculties. As previously, the Council advocates **performance-based resource allocation in teaching** which is based on clear and transparent criteria and distributed in a balanced way to provide retrospective and prospective support, and which in each case benefits the individual members of teaching staff in higher education institutions. It sees this as an important element in increasing the importance of teaching in the context of medical faculties. In addition, the Council considers it important for universities, university medical faculties and university hospitals to distinguish themselves to an even greater degree than they currently do via their different teaching programmes and the quality of their teaching. In the opinion of the Council, the ability to choose individual areas of specialisation not only offers an additional benefit to students and allows greater differentiation in their professional qualification, it also enables university medical departments to differentiate themselves to a greater extent than is currently the case through different activities and programmes in teaching – as already happens in research. |¹⁴

7 – Content overlaps exist between medical and dental training. Hence the Council recommends **linking study programmes in medicine and dentistry**, without neglecting the respective specifics of the subjects. With a view to subsequent healthcare practice, the study programme as a whole should

|¹⁴ When areas of specialisation are formed, the comparability of courses between different institutions has to be maintained. In this respect, it should be noted that students must be able to switch between university medical institutions in the future as well. An appropriate practice with regard to the recognition of course achievements also plays an important role here.

teach greater interprofessional competencies. However, given that this requirement does not apply solely to the relationship between medical and dental training, the Council makes further, more general recommendations on this point below (see II.3).

Regarding **studies in dentistry**, the Council recommended many of the above aspects back in 2005. It observes with concern that attempts to amend the licensing requirements for dentists, which date from 1955, have for years come to nothing due to in some respects irrelevant negotiation processes. It emphatically calls on policymakers in the German federal and Länder governments to reach a solution, taking the individual recommendations above into account, for the sake of the quality of studies and teaching. |¹⁵ With regard to particular dental care needs, the Council also points to the increasing importance of professional preventive care to an advanced age, particularly also under circumstances of chronic (multiple) diseases and/or nursing care needs which even at the present time dentists are no longer able to provide for on their own. This is all the more relevant given the increasing importance of preventive services as people are keeping their teeth longer, leading to an increased prevalence of periodontal diseases and their interactions with other diseases, particularly infectious diseases. In particular, **dental hygienists** are here also increasingly performing complex tasks in dental prevention and treatment. Back in 2005, the Council recommended gradually increasing the qualification level for dental hygienists, who currently practice exclusively on the basis of further training for qualified dental assistants (*Zahnmedizinische Fachangestellte*) offered by the State Chambers of Physicians (*Landesärztekammern*), and who therefore only to a limited extent have a separate basis in the laws governing the dental profession. In addition to setting up vocational schools affiliated to university dentistry departments, the development of advanced training courses at higher education institutions was suggested. |¹⁶ The Council notes with concern that in recent years, no corresponding concepts or trial models have been developed and, consequently, the development of initiatives on the part of individual dentistry departments in higher education institutions has not been continued systematically. It is therefore emphatically recommended that the legal bases for a separate profession of dental hygienist in the dental team are created, and that

|¹⁵ Wissenschaftsrat: *Empfehlungen zur Weiterentwicklung der Zahnmedizin an den Universitäten in Deutschland*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen 2005*, vol. II, pp. 267–330, particularly pp. 298–310.

|¹⁶ Wissenschaftsrat: *Empfehlungen zur Weiterentwicklung der Zahnmedizin an den Universitäten in Deutschland*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen 2005*, vol. II, pp. 267–330, pp. 294–296.

in addition to training at a vocational school, also a number of advanced training courses for qualification for precisely this profession should be set up.

II.3 Overall recommendations on interprofessional linkages between qualification paths

The preceding sections of these recommendations highlight the need to interlink the qualification paths of medical doctors and dentists on the one hand and the qualification paths for healthcare professions on the other, with a view to greater cooperation and coordination between these professions. In respect of healthcare processes which in future will increasingly need to be organised in multiprofessional teams, however, the Council also considers collaboration at the interface between doctors and dentists and the healthcare professions to be particularly important. It is therefore recommended that there should be a greater degree of interlinking than is currently the case between medical and dental courses and nursing, therapeutic and midwifery science courses, in order thus to facilitate **interprofessional training**. In this respect, the Council regards two different models in particular as being appropriate:

Cooperative model between universities of applied sciences and universities (health campus)

New courses in nursing, therapeutic and midwifery science which are set up at **universities of applied sciences** should be placed under the common roof of a faculty for health sciences. |¹⁷ The university of applied sciences should maintain an institutionalised partnership with a university that has a medical faculty including healthcare provision and academic teaching hospitals, in order to enable interprofessional training. Thus the Council advocates the **establishment of a health campus to enable teaching across higher education institutions and faculties**. |¹⁸ This health campus does not need to be an independent legal person, but it should underline the continuity and extensiveness of the cooperation agreements. The health campus should have its own management, comprised equally of members of both of the higher education institutions and faculties. The tasks of management in particular include planning the course programme, its implementation – which in particular means the respective distribution of teaching activities between the faculties and any sub-units (insti-

|¹⁷ The recommendations made here are equally applicable to courses that are set up at *Duale Hochschulen*, i.e. universities which integrate academic studies and training on-the-job in companies. *Duale Hochschulen* as a separate type of university currently exist only in the state of Baden-Württemberg.

|¹⁸ The model referred to as a “health campus” which is recommended here should not be confused with the “Healthcare Campus North Rhine-Westphalia” (<http://www.gc.nrw.de/>).

tutes, hospitals, practical institutions) – and the settlement of any possible disputes that may arise. The design, responsibility for, and implementation of the medical study programme remain matters for the medical faculty concerned.

With regard to **interprofessional training**, the Council recommends taking up a number of elements which have proven advantageous at selected higher education institutions in other countries, and adapting these to the conditions at the respective location. It is particularly important to offer teaching units which have an explicitly interprofessional orientation, where concepts and standards of collaborative working are learned and activities practised in multi-professional teams on a case basis and with regard to particular healthcare situations (Interprofessional Practice Placements). In addition, the practical patient-based study phases (practical teaching, clinical electives (*Famulaturen*), practical year, etc.) should be used to teach interprofessional competencies in specific practice settings. At the same time, it should be obligatory for a portion of practical study in nursing, therapeutic and midwifery science courses to be carried out in university hospitals or academic teaching hospitals. The Council also considers it useful to set up skills labs to be used jointly by students in all health sciences courses.

Integrative model at universities

New courses in nursing, therapeutic and midwifery science which are set up at **universities** should be placed under the roof of university medicine and under the responsibility of the medical faculty. At the same time, the Council recommends that a **university medical department for health sciences** should be added to the organisational structure of the corresponding medical faculty – where this has not happened already – which has functional and substantive independence with respect to the genuinely medical departments. In keeping with the characteristics of departments as described by the Council,¹⁹ it should have a particular academic requirements profile with substantive focuses in teaching and in research, its own decision-making powers and budget responsibility, and its own management. Faculty management should decide on the tasks and objectives, decision-making structures, responsibilities, resource usage and funding allocation according to clear and transparent rules in the overall context of the medical faculty and its other departments. In regard to the new courses being created, a significant portion of the curriculum should be provided by the department of health sciences in order to meet the respective specific qualification needs. However there are other, not inconsiderable

¹⁹ Wissenschaftsrat: *Allgemeine Empfehlungen zur Universitätsmedizin* (special volume), Cologne 2007, pp. 11–13.

parts of courses which rather more fall within the remit of university medical faculties and should take place there together with students of medicine and dentistry. In addition, when designing the curricula, the same interprofessional elements should be established which are recommended for the health campus model.

In addition to **strengthening the teaching of interprofessional competencies**, the Council sees the advantage both in the cooperative model in the form of a common health campus involving the university of applied sciences and university, and in the integrative model at universities, of giving greater **permeability** to the qualification paths for healthcare professions, and enabling **more flexible options for changing between courses**.

II.4 Regarding the costs of academisation of the healthcare professions

The academisation rate of 10 to 20% in the healthcare professions which is recommended here has financial impacts on the **scientific and healthcare systems**. Both aspects are highly complex; the level of costs and potential savings generated depends on numerous factors and therefore no detailed figures can be provided at the present time. Nevertheless, an attempt is made here at least to identify the main financial aspects involved in this academisation.

With regard to the **scientific system, additional costs for creating the course capacities and running the courses** can be expected. Assuming a target academisation rate of 10 to 20%, the Council estimates the required number of student places on undergraduate courses – including existing student places – for all healthcare professions to be in the region of 3,900 to 7,700 (see II.1). By far the largest proportion is accounted for by the nursing professions. On top of this come advanced study programmes; the number of student places required in this area depends to a large extent on the development of undergraduate course offerings and the employment opportunities that arise for academically qualified personnel, with the result that it is not possible to make reliable estimates at the present time.

The Council does not have any exact figures concerning the costs involved in setting up and running the courses. However, from the curricular values applicable to existing established courses it can be inferred that study programmes in the healthcare professions will be among the more resource-intensive courses. For example, the state of North Rhine-Westphalia quotes curricular values of between 5.98 and 6.20 for undergraduate courses at universities of applied sciences in the fields of nursing, midwifery, physiotherapy, speech therapy and

occupational therapy. |²⁰ Hence the courses in the healthcare professions are above the curricular value range for comparable bachelor's courses at universities of applied sciences (health sciences, social work, *Ökotrophologie*) with values of 4.10 to 5.30. |²¹ According to the relevant ministry, the high curricular values are explained in part by the fact that – as mentioned above – the courses in the healthcare professions are closely tied to the requirements applicable to training at vocational schools, and hence are both particularly extensive and also support-intensive. If, as recommended here, possibilities are created for deviating from these requirements (see II.1), the relevant ministry estimates that the curricular values could be appreciably reduced and would then probably lie within the same range as for the related subjects (4.10 to 5.30).

The Council points out that the basic funding available to the higher education institutions and the contributions of the Länder for the university medical faculties are not sufficient to create the required number of student places for training in the healthcare professions at higher education institutions. In the opinion of the Council, additional efforts are required on top of the funding for the Higher Education Pact (*Hochschulpakt*) in order to meet this challenge. In this context, the Council emphasises once again that these study programmes are necessary in order to safeguard or increase the quality of healthcare in the face of imminent demographic and epidemiological challenges. Given this fact, the Council considers it necessary to make the required funding available for the academisation of the healthcare professions which is recommended here.

With regard to the **healthcare system**, the Council assumes that a partial academisation of the healthcare professions will not necessarily lead to an increase in health expenditure. It is true that compared to the existing situation, a certain pay increase for academically qualified personnel in the healthcare professions can be expected – also due to issues concerning their pay scale grouping; however this need not completely eliminate the pay differences compared to medical personnel and nor therefore the cost containment potential |²² – associated with a changed division of labour in the healthcare system. Furthermore, the academisation proposed here may help to reduce costs elsewhere (e.g. through better prevention and patient education). However, effects of this kind are very difficult to assess at the present time.

|²⁰ Data provided by the Ministry for Innovation, Science and Research of the state of North Rhine-Westphalia on 29 May 2012 on request from the Council's Head Office.

|²¹ Altogether the values range from 3.50 (lower limit in the subjects of business, business law, library sciences and journalism) to 9.90 (upper limit in design subjects).

|²² Laurant, M., Reeves, D., Hermens, R. et al.: Substitution of doctors by nurses in primary care (review), in: The Cochrane Library 2004 (4), particularly p. 9.

These recommendations focus on the question of what higher education qualifications will be needed in future in the health-related disciplines – and particularly in the healthcare professions – in order to respond in an appropriate way to changed healthcare needs. In the immediate context of healthcare provision, this is an obvious focus and the development of course capacities for practice-based, patient-oriented training in the healthcare professions is currently the most urgent task. Nevertheless, the Council points out that in the medium and long term, the academisation of the healthcare professions cannot remain limited to the establishment of study programmes. To succeed in the long term, the process of academisation must also promote the formation of scientific disciplines and – closely related to this – include the establishment and development of genuine research activities and scientific career paths leading all the way to relevant professorships. As with all subjects based at higher education institutions, the aim should be to achieve **institutionalised integration of research and teaching**.

III.1 Recommendations on the further development of research

In respect of research relating to the healthcare professions, the Council comes to the conclusion that existing achievements so far have resulted almost exclusively from individual research. With regard to nursing, only a small number of group funding instruments based on third-party funding exist, and with regard to the therapeutic professions and midwifery, they are in the developmental stage at best. The establishment and reinforcement of genuine health science research profiles is for the most part a task that remains to be done. Associated with this, the formation of a disciplinary self-image of nursing science, therapeutic science and midwifery science is still in its initial stages in Germany. Hence the Council's assessment of the state of development of research in the healthcare professions is similar to that of the German Health Research Council (*Gesundheitsforschungsrat*). |²³

The starting situation is best in nursing science. With a number of university institutes, initial collaborative research projects, and opportunities for linking content with established nursing research in other countries, where it has ex-

|²³ Ewers, M., Grewe, T., Höppner, H., Huber W. et al.: *Forschung in den Gesundheitsfachberufen. Potenziale für eine bedarfsgerechte Gesundheitsversorgung in Deutschland. Konzept der Arbeitsgruppe Gesundheitsfachberufe des Gesundheitsforschungsrates*, in: Deutsche Medizinische Wochenschrift 137 (supplement 2) (2012), here pp. 41–46.

isted for some time, especially in the United States, the foundations have already been laid for the development of nursing science research in Germany. Within research relating to the therapeutic professions, speech therapy research is a positive exception. As a result of close links with traditionally established disciplines such as languages and neurolinguistics, relevant bases for genuine research activities already exist here. In contrast, only rudimentary foundations are currently in place for physiotherapy, occupational therapy and midwifery research. For this reason, the Council sees a **great need for development in research relating to the healthcare professions**. At the same time, it points out that this initial situation in research should be seen in relation to the young history of these fields in higher education institutions. Research affinity and disciplinary embedding at higher education institutions and here particularly at universities do not stand in a unilateral causal relationship but in a mutually dependent relationship.

With regard to the further development of research, the Council supports the recommendations of the German Health Research Council, which particularly in respect of the fields of **clinical research and healthcare research** has identified potentials for genuine research in the healthcare professions which is sufficiently clearly separable from research in medicine and other related disciplines. The three identified research fields of “interventions in the case of changes due to (advanced) age”, “long-term treatment and care for people with chronic diseases” and “prevention of health impairments and developmental impairments with particular consideration of vulnerable sections of the population” |²⁴ largely correspond to the challenges in healthcare practice which the Council has identified and described for the healthcare professions. Research work in these fields can make an important contribution to gaining scientific knowledge for the complex and increasingly more complex task areas in the nursing and therapeutic professions and in midwifery concerning the effectiveness of individual interventions, and to facilitating evidence-based action in healthcare practice. |²⁵

In contrast, any further agreement concerning the orientation of the respective individual disciplines is still in its early stages. Particularly with regard to the numerous and in the fields of nursing, therapeutic science and midwifery in some cases different reference disciplines in biomedical sciences and the natural sciences, the social sciences and educational science, the humanities and philosophy or psychology, there is currently no common health sciences ap-

|²⁴ Ibid., pp. 41–46.

|²⁵ Further information on research topics in the field of nursing is provided in: Behrens, J., Görres, S., Schaeffer, D. et al.: *Agenda Pflegeforschung für Deutschland*, Halle (Saale) 2012, pp. 18–38.

proach. The Council therefore points out that the establishment of study programmes and the associated gain in scientific personnel should also be used by the higher education institutions and specialist communities to develop research methods, questions and subjects for the nursing, therapeutic and midwifery sciences which are more precise than those which currently exist, to prioritise them, and to transfer them into a health sciences research agenda. The Council sees both the integrative model at universities and the cooperative model of the health campus as providing the structural conditions for a corresponding development in health sciences research. In both models, structural cooperation with university medical faculties and with other university departments is highly important. In the opinion of the Council, extensive academicisation, which in addition to the dimension of professional qualifications also relates to research activities, cannot be achieved by the universities of applied sciences alone and should take place in close interaction with the universities. The methodological, substantive and theoretical bases of university medicine and other relevant subjects should be used here. Then, on this basis, genuine research programmes can be developed and the formation of independent disciplines promoted. Given these considerations, the Council believes that it would not be appropriate to establish nursing, therapeutic and midwifery science courses without a direct link to universities as in the models described above (see II.3).

III.2 Recommendations on the further development of scientific career paths

The attractiveness of scientific career paths is key to recruiting personnel who wish to pursue a scientific career and promoting the research, teaching and healthcare activities which will be carried out in future by the health-related disciplines. As indicated in the statements above, in this respect different requirements apply to the health sciences than to university medicine. Hence the recommendations below focus mainly on career paths in the health sciences. Subsequently a number of fundamental points are noted concerning scientific career paths in medicine and dentistry.

With regard to the discipline of **nursing science**, which is still young, and the even younger disciplines of **therapeutic and midwifery sciences**, it can be said that overall there is a lack of clear scientific career paths in Germany. Such career paths are urgently required in order to avoid a situation where young scientists go abroad for their doctoral and postdoctoral studies or have to switch to related disciplines or subjects. Under these circumstances, research activities that make a firm contribution to the establishment and development of genuine nursing, therapeutic and midwifery science research are carried out only to a very limited extent. Teaching experiences are also mostly gained in other countries or in other subjects, and hence are not always beneficial in respect of the teaching tasks involved in the new nursing, therapeutic and midwifery sci-

ence courses. For these reasons, the Council recommends successively creating more **jobs for scientific personnel** in precisely these fields in the course of the further development of nursing, therapeutic and midwifery science study programmes. To ensure that personnel with scientific and practical professional qualifications are available in sufficient numbers, first of all suitable courses are required with subsequent doctoral and postdoctoral stages. In the medium and long term, more professorships should also be established which have a clear nursing, therapeutic and midwifery science profile, resulting in the appointment to these professorships of scientists who are **simultaneously distinguished in the field of health sciences research and teaching, and have a corresponding background of professional practice in nursing, the therapeutic professions, or midwifery.**

A decisive factor for entry into a scientific career is, first of all, the **doctoral degree**. With the two models for the institutional embedding of the new study programmes, the Council has also made suggestions which in a special way guarantee access to doctoral opportunities for graduates in the nursing, therapeutic and midwifery sciences. Under the integrative model, doctoral candidates in the health sciences can usually be awarded a doctorate directly by the university medical faculty to which they belong. This does not affect the possibility of gaining a doctorate in related subjects, which may be assigned to a different faculty. The separate specialist standards for a health sciences doctoral degree, which should be distinguished from the medical doctorate, should be defined and find expression in separate doctoral degree regulations and in the conferral of a separate doctor's degree. Under the cooperative model, the doctorate can also be conferred by the university medical faculty, with particular consideration of the separate specialist standards in the health sciences. The health campus should serve as a cooperation platform in this respect between the university of applied sciences and the university, as the Council recently described. |²⁶ In particular, forms of structured doctoral training should be created by the respective higher education institution.

In respect of **post-doctoral studies and research by professors**, the Council recommends that higher education institutions with a health sciences department should create their own incentives for new research activities and seek third-party funded projects. Regarding applications for third-party funding, the Council calls on the institutions which provide financial support for science to give appropriate consideration to nursing, therapeutic and midwifery science research applications in their competitive programmes.

|²⁶ Wissenschaftsrat: *Empfehlungen zur Rolle der Fachhochschulen im Hochschulsystem*, Berlin 2010, particularly pp. 29–41.

In contrast, the **scientific career paths in human medicine** have completely different requirements insofar as typical career paths and corresponding structures exist here from the doctoral degree to professorship. However, medics are often active in both scientific and clinical contexts at the same time and need to be in the field of patient-oriented research and teaching as well. The Council sees a particular need for action here in order to maintain and increase the attractiveness of scientific clinical career paths. It has repeatedly pointed out that research and teaching activities should not be neglected in favour of tasks in healthcare. In particular, the Council has several times recommended developing models to **interlink scientific doctoral and post-doctoral studies with specialist medical training**.^{|27} In this context, it is incomprehensible that in time-intensive specialist medical training, scientific achievements are currently not creditable, or creditable only to a very limited extent. It is to be welcomed, therefore, that the German Medical Association (*Bundesärztekammer*) and the State Chambers of Physicians (*Landesärztekammern*), which are responsible for the advanced specialised training, are considering recognising one year of scientific achievements as counting towards specialist medical training. The Council emphatically recommends the swift implementation of corresponding credit transfer possibilities. In addition, the Council notes that the university medicine should be involved in the development of more flexible models at the interface of scientific careers and medical training. This applies not least in view of the fact that in any case a large proportion of training time is spent in university hospitals. Hence it is worth considering formally involving university medicine in designing the speciality training regulations.

For the period following training, the Council also suggests models that **more closely interlink scientific and clinical career paths**. It advocates an intensification of supporting opportunities such as the job rotations for doctors (known as “Gerok” positions) offered by the German Research Foundation (DFG), which allow clinical scientists to take fixed-term leave from their duties in healthcare provision.

Somewhat different conditions apply to **scientific career paths in dentistry**. Because of the outpatient nature of the practice situation in general, simultaneous clinical and scientific activities are only possible at university medical insti-

^{|27} Wissenschaftsrat: *Stellungnahme zur Gründung einer Universitätsmedizin an der Carl von Ossietzky Universität Oldenburg nach dem Konzept einer “European Medical School Oldenburg-Groningen”* (Drs. 10345-10), Lübeck 2010, pp. 97-98; Wissenschaftsrat: *Stellungnahme zur Weiterentwicklung der Universitätsmedizin in Hamburg* (Drs. 1016-11), Berlin 2011, particularly p. 61; Federal Ministry of Education and Research, German Research Foundation, Wissenschaftsrat: *Kernforderungen Hochschulmedizin der Zukunft: Ziele und Visionen für die klinische Spitzenforschung*, Berlin 2004, <http://www.gesundheitsforschung-bmbf.de> (12 July 2012).

tutions that have dental clinics. Yet attractive career paths are available here only to a limited extent, which is also reflected in the lower level of research activity at many sites in comparison with medicine. In this regard the Council therefore refers to its 2005 recommendation that more scientific career opportunities should be created in dentistry. |²⁸ In particular, a number of additional positions should be created for younger scientists, and such positions should be provided with the basic equipment to enable an intensification of research. In addition, dentistry should make a greater contribution to the university medical faculties by seeking third-party funded research projects. With regard to both medicine and the health sciences, the Council sees large overlaps for future research projects, which should receive greater support particularly from higher education institutions. Examples can be seen in the fields of healthcare research, epidemiology and medical technology oriented research.

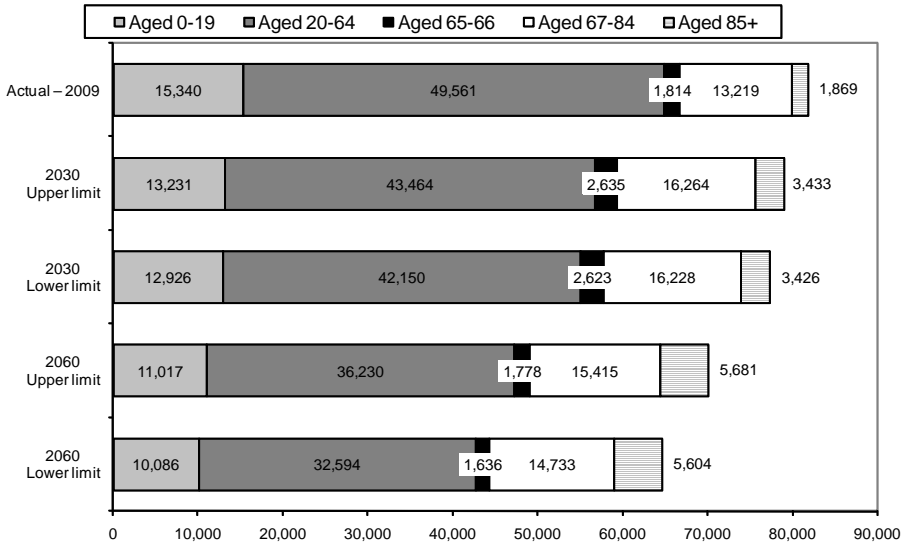
|²⁸ Wissenschaftsrat: *Empfehlungen zur Weiterentwicklung der Zahnmedizin an den Universitäten in Deutschland*, in: Wissenschaftsrat: *Empfehlungen und Stellungnahmen 2005*, vol. II, Cologne 2006, pp. 267–330, here particularly pp. 311–314.

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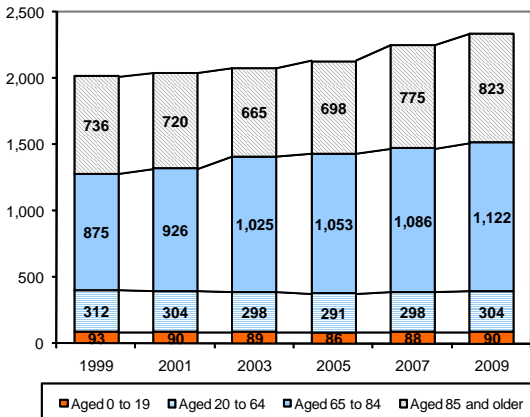
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Fig. 1: Total population distribution by age groups today and in the future in thousands (2030 and 2060 according to official population forecasts)



Source: German Federal Statistical Office: *Bevölkerung Deutschlands bis 2060. Ergebnisse der 12. koordinierten Bevölkerungsvorausberechnung*. Wiesbaden 2009.

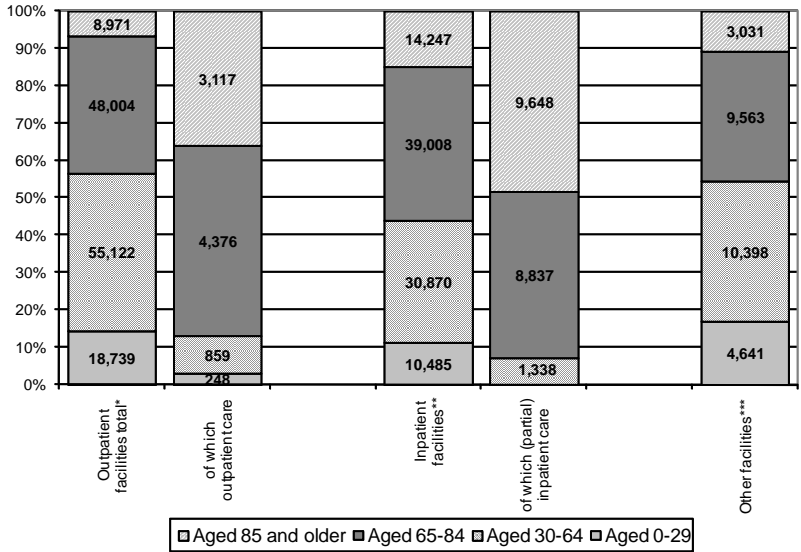
Fig. 2: Persons in need of care by age groups in thousands for the period 1999 to 2009



Source: German Federal Health Monitoring System: *Pflegestatistik – Ambulante und stationäre Pflegeeinrichtungen. Grunddaten, Personalbestand, Pflegebedürftige, Empfängerinnen und Empfänger von Pflegeleistungen*. (www.gbe-bund.de, 23 January 2012).

Fig. 3:

Medical costs by sectors and age groups for 2008 in EUR million



Notes:

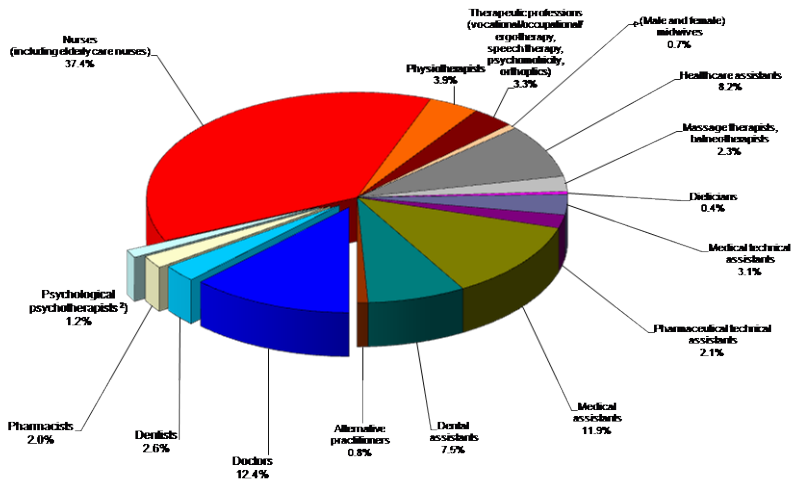
* "Outpatient facilities" means: medical practices, dental practices, practices of other medical professions, chemists, trade/retail, outpatient care, other outpatient facilities.

** "(Partial) inpatient facilities" means: hospitals, prevention/rehabilitation facilities, (partial) inpatient care.

*** "Other facilities" means: in other countries, occupational health, other facilities and private homes, rescue services, administration.

Source: German Federal Statistical Office: *Gesundheit: Fachserie 12 Gesundheit, Reihe 7.2: Krankheitskosten*. 2002-2008, Wiesbaden 2010.

Fig. 4: Employees (full-time equivalents) in healthcare professions ¹⁾, percentages by sector in 2010

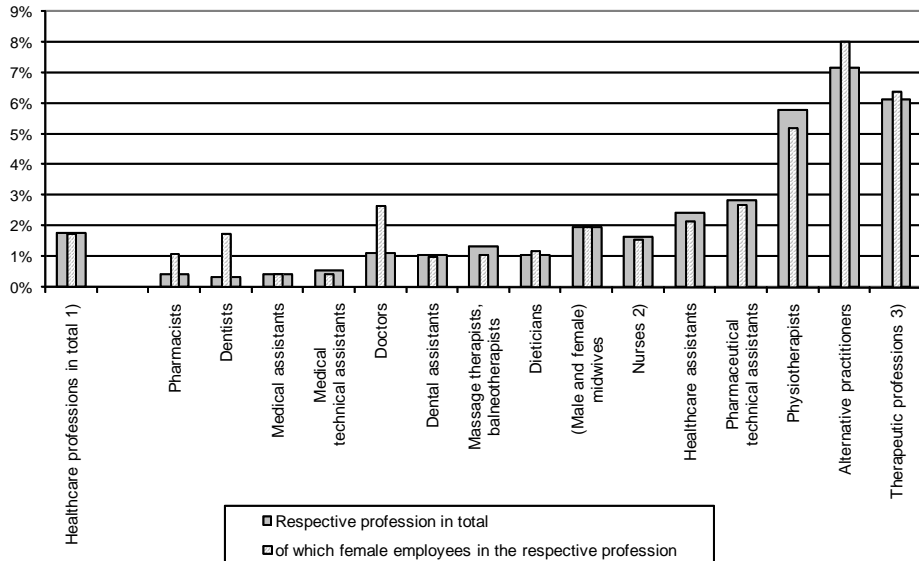


1) In the terminology of the health personnel accounts, "health service professions" include "elderly care nurses".

2) Shown as a separate category since 2006; was included with "therapeutic professions" until 2006.

Source: German Federal Health Monitoring System: *Gesundheitspersonalrechnung, Beschäftigte im Gesundheitswesen in 1.000.* (www.gbe-bund.de, 4 February 2011).

Fig. 5: Employment trend (full-time equivalents) showing average annual growth rate over the period 2000 to 2010



1) In the terminology of the health personnel accounts, these are "health service professions" including "elderly care nurses".

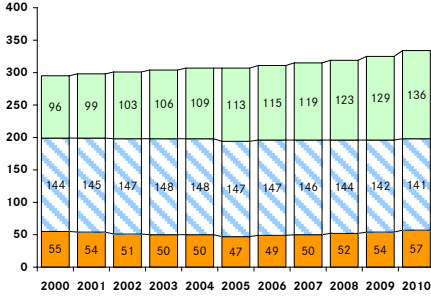
2) Including elderly care nurses.

3) Vocational/occupational/ergotherapy, speech therapy, psychomotricity, orthoptics.

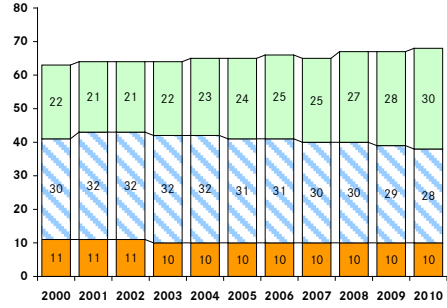
Source: German Federal Health Monitoring System: *Gesundheitspersonalrechnung, Beschäftigte im Gesundheitswesen in 1.000*. (www.gbe-bund.de, 4 February 2011).

Fig. 6: Employees (total in thousands) in the German healthcare system by age groups in the period 2000 to 2010 (selected professions)

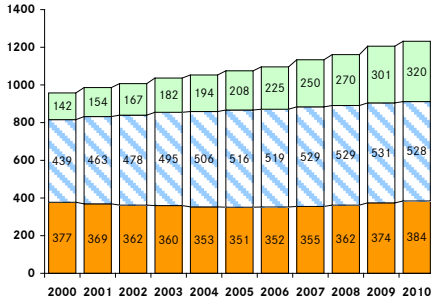
Doctors



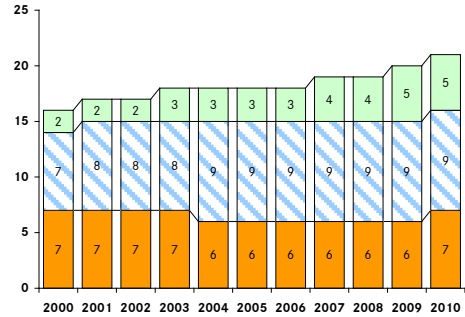
Dentists



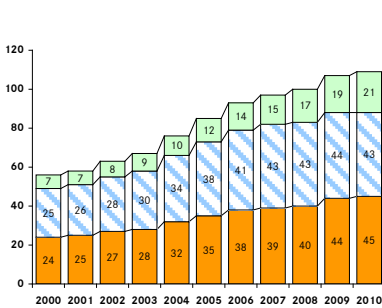
Nurses



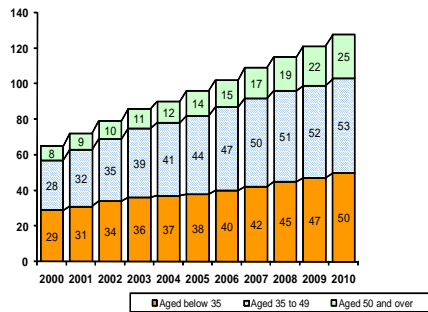
(Male and female) midwives



Therapeutic professions



Physiotherapists

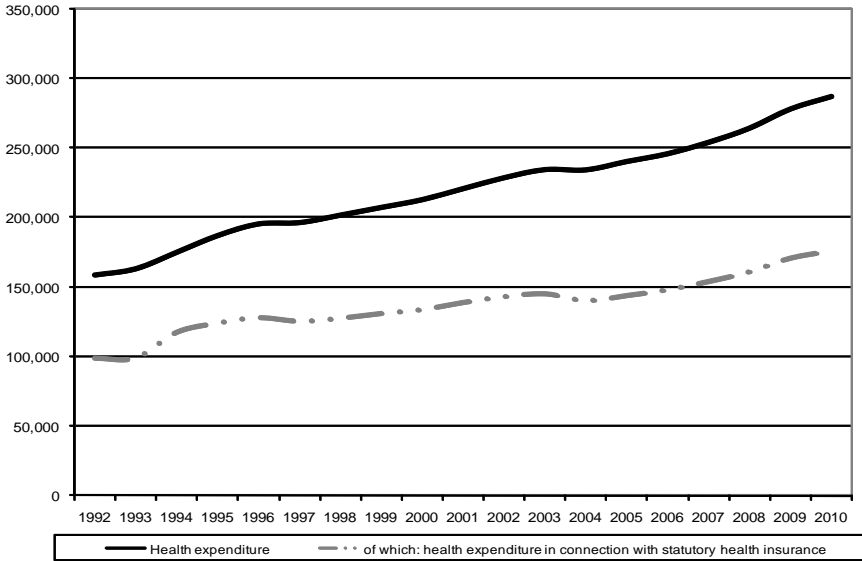


Note:

The German Federal Health Monitoring System compiles separate data for “therapeutic professions” (occupational therapy, speech therapy, psychomotricity, orthoptics) and physiotherapists.

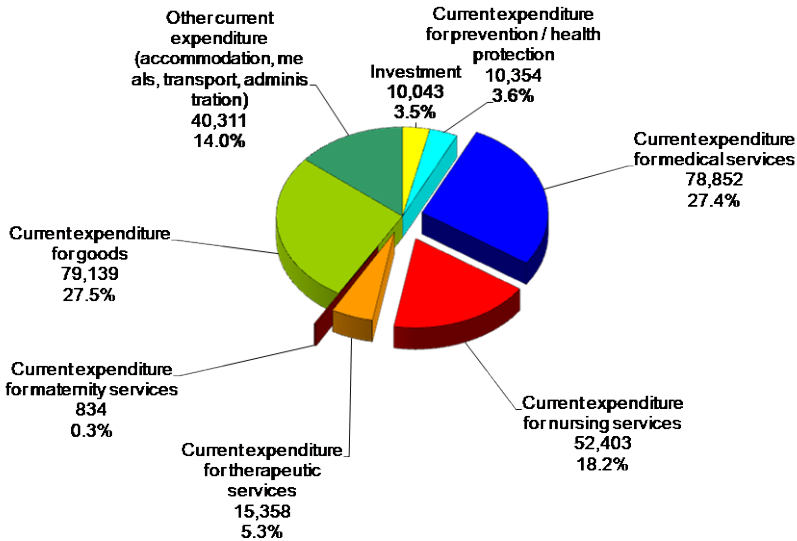
Source: German Federal Health Monitoring System: *Gesundheitspersonalrechnung, Beschäftigte im Gesundheitswesen in 1.000.* (www.gbe-bund.de, 4 February 2011).

Fig. 7: Health expenditure in Germany in EUR million per year for the period 1992 to 2010



Source: German Federal Health Monitoring System: *Gesundheitsausgaben in Deutschland in Mio. Euro: Jahre, Art der Einrichtung, Art der Leistung, Ausgabenträger*, German Federal Statistical Office 2011 (www.gbe-bund.de, 15 April 2012); German Federal Statistical Office on the occasion of the World Health Day (5 April 2012).

Fig. 8: Health expenditure in Germany in 2010 by activity type in EUR million



Source: German Federal Health Monitoring System: *Gesundheitsausgaben in Deutschland in Mio. Euro: Jahre, Art der Einrichtung, Art der Leistung, Ausgabenträger*, German Federal Statistical Office 2011 (www.gbe-bund.de, 15 September 2011).

Table 1: Course beginners and graduates in medicine and dentistry in the period 1993 to 2010

	Human medicine *)			Dentistry **)		
	Course beginners	Graduates	Course success rate with 6-year duration of studies	Course beginners	Graduates	Course success rate with 6-year duration of studies
1993	10,958	11,107		1,800	1,982	
1994	10,555	10,694		1,699	1,723	
1995	10,398	9,913		1,653	1,865	
1996	10,733	10,040		1,638	1,403	
1997	10,769	9,299		1,629	1,769	
1998	10,801	9,299		1,585	1,737	
1999	10,814	9,283	84.7%	1,640	1,569	87.2%
2000	10,691	9,141	86.6%	1,740	1,490	87.7%
2001	10,755	8,929	85.9%	1,761	1,532	92.7%
2002	10,886	8,835	82.3%	1,759	1,411	86.1%
2003	10,835	8,902	82.7%	1,794	1,505	92.4%
2004	10,419	8,833	81.8%	1,759	1,628	102.7%
2005	10,627	8,826	81.6%	1,873	1,458	88.9%
2006	10,673	8,695	81.3%	1,877	1,510	86.8%
2007	10,691	9,525	88.6%	1,901	1,510	85.7%
2008	10,598	9,798	90.0%	1,901	1,744	99.1%
2009	10,816	10,023	92.5%	1,891	1,683	93.8%
2010	10,832	9,894	95.0%	1,877	1,721	97.8%

Notes:

The calculation of the course success rate assumes that the duration of studies is six years. Deviations in the actual duration of studies from this assumed value can result in a nominal success rate of more than 100% in some years (2004 in this case).

*) For the field of human medicine, only those course beginners were included whose course culminates in the state examination in medicine. Students beginning doctoral studies and course beginners on other courses offered by university medical faculties are not included.

***) For the field of dentistry, course beginners in their first higher education semester from the respective summer and winter semester were counted.

Source: For medicine: Special request to the German Federal Statistical Office on behalf of the Association of the German Medical Faculties (*Medizinischer Fakultätentag der Bundesrepublik Deutschland*). – For dentistry: German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.1: Studierende an Hochschulen, 1993–2010*; German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.2: Prüfungen an Hochschulen, 1993–2010*.

Table 2: Graduates in nursing occupations from vocational schools in the period 1990 to 2010

School year	Total graduates	of which: Nurses	Elderly care nurses	Paediatric nurses
1990/91	21,892	17,363	2,312	2,217
1991/92	20,854	16,694	2,004	2,156
1992/93	21,836	16,975	2,446	2,415
1993/94	21,030	15,464	3,317	2,249
1994/95	22,320	16,651	3,242	2,427
1995/96	23,440	17,322	3,631	2,487
1996/97	21,004	16,901	2,039	2,064
1997/98	23,347	17,601	3,525	2,221
1998/99	23,797	17,895	3,736	2,166
1999/00	21,113	16,143	2,935	2,035
2000/01	21,074	15,927	3,118	2,029
2001/02	20,389	15,397	3,073	1,919
2002/03	19,490	14,631	3,099	1,760
2003/04	19,447	14,245	3,099	2,103
2004/05	19,896	14,543	3,508	1,845
2005/06	22,106	14,568	5,584	1,954
2006/07	20,816	13,560	5,567	1,689
2007/08	20,123	13,889	4,632	1,602
2008/09	20,731	14,300	4,809	1,622
2009/10	21,284	14,505	5,020	1,759

Source: German Federal Health Monitoring System: *Absolventen mit bestandener Abschlussprüfung aus Schulen des Gesundheitswesens, basierend auf Statistik der beruflichen Schulen des Statistischen Bundesamtes.* (www.gbe-bund.de, 30 September 2011).

Table 3: Graduates in therapeutic occupations from vocational schools in the period 1990 to 2010

School year	Total graduates	<u>of which:</u>			
		Physio-therapists	Krankengymnastinnen/-gymnasten*)	Occupational therapists	Speech therapists
1990/91	3,989	-	3,230	528	231
1991/92	4,071	-	3,305	521	245
1992/93	4,661	179	3,610	634	238
1993/94	5,057	1,015	2,918	850	274
1994/95	6,292	2,123	2,669	1,065	435
1995/96	5,075	1,916	1,612	1,244	303
1996/97	4,885	2,882	522	1,102	379
1997/98	6,964	4,587	541	1,390	446
1998/99	7,688	4,847	679	1,631	531
1999/00	7,375	4,529	668	1,550	628
2000/01	6,686	4,449	-	1,595	642
2001/02	7,142	4,595	-	1,824	723
2002/03	6,679	4,335	-	1,638	706
2003/04	6,290	3,943	-	1,587	760
2004/05	6,956	4,390	-	1,810	756
2005/06	7,604	5,025	-	1,818	761
2006/07	7,665	5,102	-	1,751	812
2007/08	7,799	5,383	-	1,591	825
2008/09	7,638	5,128	-	1,609	901
2009/10	7,412	4,996	-	1,554	862

Notes:

*) In the Länder of the former West Germany, the term “*Krankengymnastinnen und Krankengymnasten*” (also meaning physiotherapists) was in common usage for a long time. In 1995, this category was merged into the “*Physiotherapeutinnen und Physiotherapeuten*” (physiotherapists) category in Bavaria and Berlin. In 2001, the term “*Krankengymnastinnen und Krankengymnasten*” was universally changed to “*Physiotherapeutinnen und Physiotherapeuten*”, as was already used in the new Länder.

Source: German Federal Health Monitoring System: *Absolventen mit bestandener Abschlussprüfung aus Schulen des Gesundheitswesens, basierend auf Statistik der beruflichen Schulen des Statistischen Bundesamtes*. (www.gbe-bund.de, 30 September 2011).

Table 4: Course beginners (first semester) on nursing science and nursing-related courses in the period 2005 to 2010

Year	Nursing science/ management *)			Healthcare education			Health sciences/ management **)		
	Course beginners (total)	of which at uni- versities	of which women	Course beginners (total)	of which at uni- versities	of which women	Course beginners (total)	of which at uni- versities	of which women
2005	574	25.4%	75.3%	366	56.0%	84.4%	1,897	34.3%	60.3%
2006	560	28.8%	80.4%	394	55.6%	80.5%	2,017	28.9%	63.1%
2007	543	13.1%	77.0%	524	55.0%	83.2%	2,507	36.9%	65.6%
2008	846	22.5%	74.8%	497	54.5%	82.3%	3,351	25.8%	69.5%
2009	994	8.8%	81.2%	593	60.7%	84.8%	4,219	24.4%	68.9%
2010	1,124	8.9%	74.5%	653	29.1%	83.8%	4,465	24.9%	70.7%

Notes:

*) The “nursing training” subject was assigned to the “nursing science” subject as of the 2004/05 winter semester, as a result of which the it changed from the field of study “social work” to “general health sciences”.

**) The “management in health and social work” subject was assigned to the “health science/management” subject as of the 2004/05 winter semester, as a result of which it moved from the “economic sciences” field of studies to “general health sciences”. The “social medicine / public healthcare system” subject was assigned to the “health science/management” subject as of the 2004/05 winter semester, as a result of which it moved from the “social work” field of studies to “general health sciences”.

Source: German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.1: Studierende an Hochschulen*, various years.

Table 5: Graduates in nursing science and nursing-related subjects in the period 2005 to 2010

Year	Nursing science/ management *)			Healthcare education			Health sciences/ management **)		
	Graduates	of which at uni- versities	of which women	Graduates	of which at uni- versities	of which women	Graduates	of which at uni- versities	of which women
2005	453	9.7%	75.3%	204	39.2%	78.9%	1,025	10.1%	69.6%
2006	458	9.6%	78.6%	273	37.0%	81.3%	1,279	5.0%	64.6%
2007	572	7.9%	73.6%	325	25.8%	83.7%	1,397	5.0%	62.5%
2008	679	14.0%	75.8%	444	22.7%	81.3%	1,598	28.2%	63.3%
2009	665	10.8%	76.4%	412	27.9%	80.3%	2,279	29.5%	63.1%
2010	676	5.8%	79.3%	481	28.1%	84.0%	2,693	31.0%	63.9%

Notes:

*) The “nursing training” subject was assigned to the “nursing science” subject as of the 2004/05 winter semester, as a result of which the it changed from the field of study “social work” to “general health sciences”.

**) The “management in health and social work” subject was assigned to the “health science/management” subject as of the 2004/05 winter semester, as a result of which it moved from the “economic sciences” field of studies to “general health sciences”. The “social medicine / public healthcare system” subject was assigned to the “health science/management” subject as of the 2004/05 winter semester, as a result of which it moved from the “social work” field of studies to “general health sciences”.

Source: German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.1: Studierende an Hochschulen*, various years.

Table 6: Course beginners (first semester) on therapeutic science courses in the period 2005 to 2010

Year	Non-medical healthcare professions /therapy		
	Course beginners (total)	of which at universities	of which women
2005	737	45.9%	85.8%
2006	484	21.3%	77.7%
2007	608	23.0%	79.3%
2008	815	23.1%	80.0%
2009	709	17.9%	78.8%
2010	1,063	10.0%	82.6%

Source: German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.1: Studierende an Hochschulen*, various years.

Table 7: Graduates in therapeutic science subjects in the period 2005 to 2010

Year	Non-medical healthcare professions /therapy		
	Graduates	of which at universities	of which women
2005	202	18.3%	81.2%
2006	489	25.6%	82.6%
2007	523	10.9%	83.9%
2008	606	9.6%	84.2%
2009	873	13.3%	85.3%
2010	835	11.3%	85.0%

Source: German Federal Statistical Office: *Fachserie 11 Bildung und Kultur, Reihe 4.1: Studierende an Hochschulen*, various years.