



Rethinking Medical Training in Germany Towards Rural Health Care

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Abstract

Germany is facing increasing challenges to safeguard universal access to quality health care since the provision of medical services in rural areas is shrinking. International evidence provides two important lessons learned: strengthening primary health care can contribute to reducing the undesired effects of social and demographic transition; and tax-borne or government healthcare systems are more effective in promoting primary health care. This paper argues that structural conditions in the healthcare sector as such and in medical faculty prevent decision makers from effectively reacting either through more adequate contractual arrangement between the various stakeholders of the corporatist system or by enforcing a more suitable education of health professionals. While innovative models of healthcare provision and financing inevitably clash with vested interests, the reforms needed in medical training challenge the current design and prevailing incentives of medical schools. Beyond convincing concepts, strong political will be indispensable for implementing the reforms needed for ensuring countrywide access to health services.

Keywords: Rural health; Health care system; Corporatism; Decentralisation; Medical training; Social accountability

Abbreviations: WHO- World Health Organization; SHI- Statutory Health Insurance; GP- General Practitioner; DZNE- Neurodegenerative Diseases

Introduction

Germany is generally recognised as a country spending a relatively high share of its gross domestic product for health, providing universal health protection, quality health services and good access to care [1,2]. Being a federal republic, Germany has implemented a series of equalisation and compensation mechanisms in order to achieve the constitutional right of all citizens to benefit from equal living conditions all over the country. The right to health, however, is increasingly challenged due to growing regional inequities especially with regard to health care provision. Although Germany is a small country in the centre of Europe, rural areas are facing the challenge to ensure access to health care within the region. As medical specialists and hospitals tend to practice in urban centres, providing general and family medicine in remote areas is the most important measure for safeguarding health care outside urban areas. The natural turnover of elderly rural practitioners combined with the low level of recruitment and increasing problems to retain health professionals in rural locations calls for immediate action.

International evidence shows that supporting medical careers in rural areas through graduate training is an effective and sustainable means for reducing the rural exodus of physicians and preventing severe undersupply of medical services in rural areas [3]. Health scientists and politicians agree upon the need to re-orientate medical training towards family and rural medicine. However, a series of systemic, structural, institutional, political and ideological conditions make the necessary reforms and transformations difficult to implement. This paper analyses the most important constraints for effective policy measures to strengthen family and rural medicine and give primary health care a stronger role. Based on a brief introduction of relevant framework conditions and features of the German healthcare system as a whole, the paper will mainly describe and briefly discuss the most important constraints for strengthening primary medical care, which exist at institutional level and at medical schools.

Background

Germany is the most populated nation in the European Union. Like other developed countries, the German society is mainly urban with

only 18.6 million out of 80 million people (23,06 %) living in sparsely populated areas, which in turn comprise two thirds of the national territory (66,54 %). Population density varies between 1,606 per km² in densely populated areas and 78 per km². In the East German federal state of Saxonia-Anhalt in turn, more than two in every 5 citizens (41.4 %) live in sparsely populated regions and less than 25 % in urban areas [4].

Its per-capita gross domestic product of 35,200 EUR [5] makes Germany one of the wealthier nations among European and other industrialised countries. Despite some regional disparities, average household income is generally higher in the Southern states compared to the North and in former West compared to East Germany. Regardless of the given variations, household income tends to be lower in sparsely populated rural areas [6]. Higher unemployment rates and a larger share of elderly often accomplish the situation in economically less developed regions.

Compared to other industrialised countries, Germany depicts a relatively high overall density of practicing physicians (3.8 per 1,000 populations) but they are unequally distributed. The population-physician ratio varies between federal states and is much higher in city states compared to those with lower population density. In addition there is a remarkable difference between the Northern and Southern parts as well as between former East and West German regions. With regard to the number of accredited outpatient physicians, coverage varies between 197/100,000 population in Germany's largest city of Berlin and 134/100,000 in the former East-German state of Saxonia-Anhalt [7]. Specialists in rural regions have to take care of minimum 54 % (ophthalmologists) and up to 127 % (neurologists) more people compared to their colleagues in urban centres [8]. The situation is less pronounced for general practitioners but still significant; even without taking into account the major cities, which depict a clear oversupply of

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generalists, population coverage varies significantly between urban and rural areas [7].

The German Healthcare System

Germany's healthcare system is internationally known as a pioneer of social health insurance initiated as early as in 1881 under Chancellor Otto von Bismarck who lent his name to one of the basic types of health financing systems [9]. After stepwise expansion of both population coverage and benefit packages, health care in Germany is now universal with practically all residents covered by comprehensive healthcare with relatively low out-of-pocket payments. Beyond this general condition, the German health system and particularly the complex interaction of various decision makers are not well known at international level. Confusion often arises from the fact that in many countries "public" is understood as synonym of "state-run" what makes public-private the only alternative in the categorisation of political or economic entities. But the issue is a bit more complex. In Germany – like in other countries with social insurance systems – the State decided to outsource a series of functions and responsibilities to special bodies in order to delegate various tasks to self-governed and often decentralised institutions. In the health sector, this mechanism applies to both payers and providers: Statutory Health Insurance (SHI) is responsible for enrolling beneficiaries and for collecting, pooling and allocating financial resources for health care; panel physicians are mandated to be members of the regional Statutory Health Insurance Physician Association if they want treat and be paid for SHI beneficiaries. Both institutions are mandatory for insurees and panel physicians, respectively, regulated by public law, and supervised by the Ministry of Health; but they are autonomous, not-for-profit and self-governed. Despite the high level of autonomy, the specialised bodies are public in nature; they act on behalf of the State and have to negotiate all relevant arrangements including remuneration issues among themselves.

Everybody residing in Germany is mandated to take out health insurance; and entitlement to health benefits requires enrolment and regular contribution payment. Services are provided free of charge at the point of service except some minor co-payments. Practically 90 % of the population living in Germany is mandated to enrol into Statutory Health Insurance (SHI - Gesetzliche Krankenversicherung). Besides SHI covering the vast majority of residents, the better off with a yearly income above almost €50,000 (USD 54,000), self employed, and civil servants for complementary coverage beyond the tax-funded government employee benefit scheme can opt for private health insurance (about 11 % of the population). Salaried workers and employees below that income threshold have freedom of choice between the currently 120 public non-profit "sickness funds" and are automatically enrolled via their work places. The contribution is basically shared between employer and employee (7.3 % of the salary each), but the latter have to pay an additional 0.9 % of their income. Contribution rates are basically the same for all enrollees, but statutory health insurance funds can charge an additional income share if the revenue turns out to be insufficient to cover the expenses. This is because SHI applies the pay-as-you-go principle meaning that they have to operate with the current revenue without making benefits or debts.

Provider payment is negotiated in complex corporatist social bargaining procedures among specified self-governed bodies (e. g. physicians' associations) and the Statutory Health Insurance as a whole. The sickness funds are mandated to provide a unique and broad benefit package and cannot refuse membership or otherwise discriminate on an actuarial basis. Unemployed and social welfare beneficiaries are

enrolled in SHI through contributions paid by the Unemployment Insurance or the municipalities, respectively, on behalf of them.

Civil servants benefit from a tax-funded government employee benefit scheme paying a percentage of the costs, and cover the remaining costs with a private insurance contract. Persons with incomes above the prescribed compulsory insurance level, self-employed persons and university students have the option to choose between statutory and private insurance. Together with Chile, Germany is the only OECD country with universal population coverage that allows better-off citizens to fully opt out of the public health-insurance system and enrol into private insurance. In addition, various types of private supplementary insurance are available as add upon to the statutory sickness funds.

Both public and private health insurance cover a broad scope of health services ranging from preventive care over highly specialised medical treatments to rehabilitation services. The benefit package to be covered by statutory health insurance is defined by the so-called Federal Joint Committee (gBA) equally composed by representatives of payers and providers – namely health insurance funds on the one side and physicians and hospital associations as well as other suppliers on the other side – and the chairman. The Federal Joint Committee is the paramount institution of the German corporatist healthcare system.

System Constraints for Strengthening General and Rural Health in Germany

Corporatism in the Healthcare Sector: The fact that Germany's healthcare sector is the archetype of a decentralised corporatist system has important implications for any strategy that aims at strengthening primary health care. Since the state has delegated powers and decision-making competences to nongovernmental public bodies, it is much more challenging or even impossible to directly implement political decisions in daily practice. Statutory health insurance funds and provider organisations such as office-based SHI physicians' and dentists' associations or hospital federations are influential players within the German health sector. As the duty and power to decide upon benefits, prices, standards and other topics related to healthcare provision relies on self-governed "corporatist" bodies, imposing public policies is not a minor task since all stakeholders have their own interests and priorities. It is the job of legislators to promulgate laws, but for instance the regulations regarding outpatient care have to be agreed with the regional associations of panel physicians and statutory health insurance funds, and also between the two bodies [10].

Compared to countries with state-run or tax-borne healthcare systems, the various stakeholders in the German health sector have larger autonomy and better conditions to champion their own interests. Strengthening primary health care implies to face all interest groups, which are not benefiting or even have competing priorities. To start with statutory health insurance, beyond the theoretical finding that strong primary care has the potential to rationalise the use of health services and reduce health expenditures insurance funds do not depict effective strives for promoting primary health care compared to other levels of care. The lack of integration between primary, secondary and tertiary services, and the duplication of specialist services in outpatient and inpatient care remain common, and the waste of resources persist [11]. The insidious commercialisation of both health financing and healthcare provision through a series of market-oriented reforms [12,13] further increases the already existing barriers to strengthening primary health care and its role in the German health sector.

There have been different approaches to prioritise general medicine

in ambulatory care such as implementing co-payments for direct use of specialised services without referral by a general practitioner (GP) or various strategies to set up managed-care models based on general practitioners. The so-called practice fee could not develop the intended steering effect as the original idea was undermined by introducing a general co-payment for all office visits, while GP-centred managed care remained financed by extra-budgetary funds and has not yet made it into regular healthcare provision. Moreover, patients do not need to formally register with a practice [14]; and all attempts to promote the use of generalist health services clash with people's freedom of physician choice that has become a highly relevant commodity among in Germany [15].

Hierarchical Relationship of Health Professionals

In addition, the established working relations among the various health professions hamper a stronger role of primary care. German legislation defines physicians as the leading professional group in the healthcare sector; all other health service providers can only deliver diagnostic and therapeutic services on indication of a medical doctor. This reduces primary health care to a large extent to general or family medicine and prevents other health professions from playing a more proactive role in providing outpatient primary care. Despite some recent pilot projects, where selected tasks are delegated to medical assistants, many relevant functions are restricted to officially registered physicians.

Implementing more participatory and interdisciplinary approaches in primary health care calls for essential changes in the German health sector [16]. The reforms required for implementing innovative models of healthcare provision, which are promising to tackle the arising challenges in general practice and particularly in rural health, will inevitably create clashes with relevant stakeholders, particularly with physicians and their legal bodies. The prevailing role of medical doctors in healthcare provision is reflected in their predominant position in the health sector. This applies especially to outpatient care where panel physicians have shown much resistance to delegating medical services to nurses or medical assistants like in other countries; at the same time, however, they continuously complain about the heavy workload generated by the perceived high demand of patients [17].

But it is not only the willingness of German physicians to cooperate with other health professionals that offers much room for improvement. Statutory health insurance funds for outpatient care are channelled through the panel physicians associations according to the agreements achieved in regular negotiations of the two autonomous bodies. These funds are used to pay for outpatient medical and other health services including physio- or ergotherapy and home care. Access to other health professionals in outpatient care depends hence on physicians will to provide the respective indication and financial approval because services provided outside the medical office put a strain on the panel physician office budget. The need of prescriptions and financial implications provides physicians with the gives medical doctors full control and sovereignty regarding the use of or access to non-physician health services.

Another challenge for general practice derives from the fact that the overall budgets allocated quarterly by statutory health insurance for outpatient care are assigned to all panel physicians in a regional association. This implies an on-going battle for a piece of the cake between generalists and specialists, on the one hand, and between the different specialist groups, on the other hand. The position of specialists within the associations has traditionally been stronger compared to

generalists, and there is no change in sight. This makes it extremely difficult to strengthen primary health care at provider level. The autonomy and self-governance of statutory health insurance physician associations prevents the national as well as regional governments from imposing interventions and reforms in healthcare provision in order to strengthen the primary level.

Federalism in Healthcare Provision and Academic Institutions

Germany is a federation composed by 16 Länder that depict quite heterogeneous characteristics with regard to surface, population size, economic activity, income and others. While three of them are urban states and hence do not face the challenge to care for remote areas, others are relatively large and show a variable mix of urban and rural regions. The federalist structure is reflected in a number of political and institutional structures. Regarding healthcare and medical education in Germany, federalism has strong impact on both. For instance, the Länder are responsible for regional hospital planning and for covering hospital infrastructure and investment. The former regional organisation of some large social health insurance schemes has stepwise disappeared due to concentration and merging processes under the existing rules of competition [10].

Particularly relevant for primary health care is the fact that outpatient care is organised according to federal states. Medical Chambers and especially associations of statutory health insurance physicians are still organised at federal-state level. Since the latter are responsible for safeguarding access to healthcare in a defined region and for remunerating outpatient-care providers, all interventions, changes or reforms concerning primary health care have to be negotiated with the regional representations of panel doctors, primarily when it comes to agree upon financial responsibilities and obligations. The national federation of panel physician associations can provide recommendations and guidelines but decision power is at regional level.

Federalism is also very strong in the German educational system since the responsibility for primary, secondary and tertiary education lies exclusively on the Länder. Since practically all medical schools in Germany depend on regional governments, it is not an easy task to implement changes in university training according to national policy decisions or priorities. The federal government cannot prescribe nationwide curricula, teaching and learning content or other elements of undergraduate training; on the other hand, universities have – at least in theory – the chance to adapt their priorities and education to specific needs in the Land they are located in. Local or regional priority setting in research and academic training, however, is not yet anchored in science policies in Germany and not even included in current recommendations for higher education [18]. This paper illustrates that the medical school at the University of Magdeburg is an eloquent example for the rather ossified curricula structures of the German university system. These general conditions are particularly relevant for the on-going efforts to strengthen primary health care through adequate undergraduate training, as national policies cannot be directly implemented in medical training unless federal-state governments follow voluntarily the respective guidelines.

Medical Schools' Prioritise Highly Specialised Care

Due to the corporatist structure of the German healthcare system, vocational training of general practitioners is under the auspices of the regional chambers of physicians while medical schools or departments of general practice and family medicine are not formally involved [14]. The historical separation of postgraduate training from academics has not only prevented research to be a part of vocational training, but also

hampered the awareness of primary care research and evidence-based medicine in clinical practice in Germany. On the other hand, academic departments of general practice and family medicine or primary health care are quite recent in German universities starting only in the late 1970s. It is striking that medical schools ultimately depict an insufficient level of preparedness - and apparently also of willingness - to give adequate answers to the growing challenge of lacking family and general medicine and under-served rural regions. To a large extent, practical medical training occurs at university clinics and well-equipped hospitals providing (highly) specialised medical care instead of general and family medicine services. Due to traditional role models, social reputation, lacking opportunities to get into general and family medicine, and the above-mentioned provider payment mechanisms, this condition is extremely difficult to overcome.

Moreover, a series of relevant structural changes corroborate the trend of medical schools to give family and rural health only a secondary or even tertiary role in undergraduate medical training. During the last 25 years, the business model of German universities - which are essentially public and responsibility of the *Länder* - has undergone fundamental changes: "Third-party resources" have increasingly replaced the hitherto budget financing through federal states. The selection and appointment of professors and university teachers does not depend only on academic and professional reputation but increasingly also on the ability to access third-party funding [19]. Moreover, the academic world has increasingly become competitive and market driven [14]. The options for defining research according to public priorities and democratically determined requirements, and the independence of scientific research have lost importance since academic activities are often determined by external demand, potential marketization, opportunities to publish in ranked journals and even the obsession of researchers to make themselves mark.

It would be naive to expect these underlying conditions do not have impact on staffing, equipment, priority setting in research and medical education. The University of Magdeburg is a shining example for the huge distance that often exists between academic research and real-life needs. Magdeburg is the capital of the federal state of Saxonia-Anhalt that stands out for being one of the economically least developed *Länder* with limited options to grow, a number of rather remote rural areas, demographic ageing enhanced by rural exodus, and a generally low level of education. Nonetheless, the university in the region has decided to put priority on scientific - including basic - research in two areas, namely immunology and neurosciences.

There is no doubt about the relevance and importance of basic research as indispensable approach for developing and applying new diagnostic and therapeutic pathways and ultimately for improving health care. With regard to the University of Magdeburg, the capital of a rather poor federal state, the allocation of limited resources is arguably a valid question. The need to acquire third-party financing from public institutions that have an interest in promoting *Länder* of former East-Germany and from private companies, which also receive subsidies for investing in lower developed regions, is a strong driver for academic institutions to stand out for their excellency in specific areas.

On the other hand, personnel decisions together with ambitions and the general climate in the academic world mainly driven by publication pressure, reputation and individual ambitions, but also by competition, favouritism and particularly by main-stream trends are likewise important for priority setting in higher education. Actually, a positive feedback loop between the endeavour for third-party funding and the struggle for scientific reputation is the main driver in university-

based research and education; this makes the medical academic system susceptible to losing contact with real health-service needs over time. Medical training focuses largely on acquiring biomedical information and technological skills. The worldwide prevalent model of medical schools tends to direct students away from developing the competences and attitudes required to understand and address the determinants of health [20]. At the same time, however, medical schools are legitimately expected to be accountable for covering the needs of society and the living environment - particularly if they are public like in Germany.

General conditions of university research force academics sometimes into linkages, which rather obey political economy than appropriateness or rationality. A joint project of the Institutes of General and Family Medicine and of Social Medicine and Health Economics at the University of Magdeburg with the German Centre of Neurodegenerative Diseases (DZNE) might serve as an example. The so-called Neurotrans project "Dementia in research and practice" aims at improving linkages between basic research and outpatient generalist care. The collaboration might be useful for recruiting "community-acquired" dementia patients, but the objective to mediate diagnostic and therapeutic options in a manner suited to patients seems to be extremely ambitious as long as these options are still unexplored and have not proven to be effective. Such cooperation would make much sense in the fields with convincing evidence for the effectiveness of medical procedures and treatments in order to overcome the huge gap between clinical study results and community effects in outpatient care, e. g. for cardiovascular diseases or diabetes mellitus.

With regard to the early detection and effective treatment of dementia, however, progress is still to be seen and still requires much basic research before medical science will be able to offer something at this point of time. Attempts to bring together theoretical and basic neurosciences with health services research, particularly in general and family medicine, are hence rather ambitious or even inappropriate for health problems with poorly developed therapeutic approaches. The rationale behind the cooperation of the two university institutes in Magdeburg with the DZNE comprises the need to create links with "fashionable" topics and to adapt to exogenous priority setting of the medical school as a whole but does not seem to be based on rational arguments and existing demand from a general medicine perspective. At the same time, the focussed and highly specialised orientation of medical schools restricts the space for research on the most pressing challenges of general and family practice and relevant topics of health services research in the region. Priorities in the field of medical research are hardly appropriate for improving undergraduate medical training and even less for tackling the major health needs in *Länder* like Saxony-Anhalt.

Discussion

Rethinking and reforming medical school design and orientation are indispensable for making clinical research, health care services and also undergraduate medical training more suitable to the current and future demand. Basic scientific research is of low relevance for preparing medical students and hardly included in medical undergraduate education. Moreover, highly specialised and focalised research does not contribute to overcome the most pressing constraints and challenges such as overspecialisation of health care and underservicing in rural areas. For safeguarding high-level health care all over Germany, both academic and political decision makers will have to promote necessary reforms to overcome the self-referential academic system, and provide adequate incentives for needs-based medical research and training. Properly designed and mandated accreditation systems for medical

schools will have to abandon traditional pathways and reflect both social accountability and excellence of education.

Institutions demonstrate social accountability by committing themselves to addressing and solving challenges and demands of the society. The World Health Organization defines social accountability of medical schools as “the obligation to direct education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have the mandate to serve” [21]. More recently, social accountability has been identified as a change agent for the future with the potential to deliver high-quality education and graduates who respond to societal needs [22]. In the case of the University of Magdeburg medical school there is much room for further developing and underpinning social accountability by better taking up the demands of the surrounding geographic region and particularly the obvious need for safeguarding rural health care according provided by the German constitution.

Moreover, a series of rather fundamental changes will be required for achieving and ensuring both responsibilities for the comprehensive health care commitment to community-oriented biomedical and health-service research in the region or in a defined part of Saxonia-Anhalt. At faculty level, WHO recommends including general practitioners who are delivering primary health care outside the (university) hospital as full members of the teaching staff; adequate academic appointment of general and particularly rural practitioners is promising to strengthen training for primary health care in the community [21]. Although medical training provided by the Institute of General and Family Medicine involves active practitioners, the still prevailing model of single-doctor practices and the contractual inflexibility of public services prevent medical schools from the effective integration of primary-care practitioners in the faculty staff.

Last but not it is worth mentioning that a growing international critics of “fragmented, outdated, and static curricula that produce ill-equipped graduates” [23] and the emerging debate on the future of medical training have not yet arrived in medical training and faculty in Germany. Physicians for the 21st century must acquire intimate knowledge of how complex (health) systems function and have to incorporate a public health perspective with its emphasis on the health of populations that goes beyond the individual clinical approach of medical practitioners [24]. A common denominator of socially responsible and accountable medical training has to be a deliberate focus on graduating health professionals who have the skills and desire to provide health care that meets community needs [25].

In reference to ensure equitable access to health care all over the federal state of Saxonia-Anhalt, the Faculty of Medicine at the University of Magdeburg will have to offer courses in health sciences and epidemiology related to determinants of disparity in health and rural health care. To overcome the limited exposure to real life situations in the field, a socially responsive school will require medical students to engage in community-based activities throughout its curriculum, assess their competences to care for people living in rural settings and encourage graduates to settle in underserved areas [26]. The imposition of greater social accountability into accreditation could be instrumental in production of a professional workforce that is well aligned with societal health goals and to develop accountability with regards to core health performance issues such as equity, quality, and efficiency [23].

Traditional academic excellence focusing on basic scientific research and sophisticated specialised topics has definitely a lesser potential to strive for improved healthcare delivery and greater impact

on people's health through tied bonds with society [21,26]. Recent recommendations of the German Council of Science and Humanities (Wissenschaftsrat), the advisory council on matters of organisation of the higher education system, on the further development of medical training in Germany [27] does not adequately address the forthcoming health-system challenges and even fails to comply with the goal to find the right balance between biomedical research, teaching and patient care [28]. Needs orientation of academic training and social accountability of universities and faculties have not yet achieved the imperative relevance in the political debate on university and academic training in Germany.

Conclusions

The growing gap between workforce availability and preparedness on the one hand, and the demand for safeguarding universal access to health care in the German state of Saxonia-Anhalt on the other calls for urgent action. Both the corporatist health sector and medical training have to be adapted to changing social and societal needs. Innovative contractual arrangements between statutory health insurance and providers associations are needed for overcoming the challenges deriving from the unequal distribution of medical professionals and the rural exodus of physicians. Medical schools have urgently to adapt their curricula, research, education and priority setting to current needs and strive in order to become socially accountable. Public policy in the health, education and research sector have to create incentives for this change to happen and ultimately to enforce the structural changes required for producing adequately prepared health workforce. Therefore the most brilliant ideas and convincing concepts will certainly not suffice to change the framework conditions and put the institutional arrangements right; strong political and smart alliances will be needed for implementing the required reforms and ensuring universal access for all citizens in Germany.

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