

A post-Flexner comparative case study of medical training responses to health system needs in Brazil and Germany

Roland Koch ,¹ Hannah Fuhr,¹ Lilian Koifman,² Heidrun Sturm,¹ Cláudia March,² Luiz Vianna Sobrinho,³ Stefanie Joos,¹ Fabiano Tonaco Borges²

To cite: Koch R, Fuhr H, Koifman L, *et al.* A post-Flexner comparative case study of medical training responses to health system needs in Brazil and Germany. *BMJ Global Health* 2022;**7**:e008369. doi:10.1136/bmjgh-2021-008369

Handling editor Seye Abimbola

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bmjgh-2021-008369>).

Received 23 December 2021
Accepted 14 March 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Institute for General Practice and Interprofessional Care, Universitätsklinikum Tübingen, Tübingen, Germany

²UFF, Niteroi, Rio de Janeiro, Brazil

³Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

Correspondence to

Dr Roland Koch;
roland.koch@med.uni-tuebingen.de

ABSTRACT

Health systems need medical professionals who can and will work in outpatient settings, such as general practitioner practices or health centres. However, medical students complete only a small portion of their medical training there. Furthermore, this type of training is sometimes seen as inferior to training in academic medical centres and university hospitals. Hence, the healthcare system's demand and the execution of medical curricula do not match. Robust concepts for better alignment of both these parts are lacking. This study aims to (1) describe decentral learning environments in the context of traditional medical curricula and (2) derive ideas for implementing such scenarios further in existing curricula in response to particular medicosocietal needs.

This study is designed as qualitative cross-national comparative education research. It comprises three steps: first, two author teams consisting of course managers from Brazil and Germany write a report on change management efforts in their respective faculty. Both teams then compare and comment on the other's report. Emerging similarities and discrepancies are categorised. Third, a cross-national analysis is conducted on the category system. Stakeholders of medical education (medical students, teaching faculty, teachers in decentral learning environments) have differing standards, ideals and goals that are influenced by their own socialisation—prominently, Flexner's view of university hospital training as optimal training. We reiterate that both central and decentral learning environments provide meaningful complementary learning opportunities. Medical students must be prepared to navigate social aspects of learning and accept responsibility for communities. They are uniquely positioned to serve as visionaries and university ambassadors to communities. As such, they can bridge the gap between university hospitals and decentral learning environments.

INTRODUCTION

Medical education globally trends towards integrating more practical training in general practitioner (GP) practices or smaller regional hospitals and health centres and away from the academic medical centre or university hospital. Those former settings

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ In Brazil and Germany, there is a disconnect between health care needs and medical education. To prepare health workers for global challenges, there is a need for resilient, evidence-based approaches to transform traditional curricula into curricula that are aligned with community health care needs.

WHAT THIS STUDY ADDS

⇒ Community learning environments are central to the shift to a health needs-based curriculum. However, there is a disconnect between university-based and community-based learning. Its root lies in socialisation processes of medical education.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE AND/OR POLICY

⇒ This disconnect can be bridged if those responsible for curriculum change accompany the transition of students into community-based learning environments, facilitate negotiations with stakeholders in an appreciative manner and challenge the prevailing static ideal for medical teaching.

are called community-based or decentral learning environments (DLE).^{1–7} Several studies show that exposure to such environments motivates medical students to pursue careers related to outpatient work.^{8–10} There are two main arguments for training in DLE: first, medical students need to develop basic competencies in population-based health approaches and treating common diseases as well as rare diseases.^{2 4 5} University hospitals tend to overrepresent the latter.¹¹ Second, healthcare (HC) systems need a workforce that follows career paths in outpatient HC, is willing to work in remote areas, and with population-based health problems (ie, sanitation, infectious diseases).^{5 12–15} The lack of such a workforce impacts a HC system's responsiveness to extraordinary events such as natural disasters, wars or a pandemic.^{14 16}

DLE training takes on different forms around the world with varying degrees of implementation in the curriculum. The WHO has stated that global curricular reform efforts should target medical training to local and national needs. Even so, hospital-oriented and highly specialised training with little or no attention to HC responsiveness to communities is still prevalent.¹⁷

Whether or not DLE offer effective training scenarios for medical students—especially in comparison to university hospital centred training—is debated.^{18–20} Heterogeneity and difficulties in managing teaching quality^{7 21} are used as arguments against DLE training.²² In the scientific literature, the debate prominently follows a ‘Western’ ideal of medical education first introduced to the global medical education community by Flexner:

In 1910 and 1912, Flexner reported on teaching quality in medical schools and medical faculties in the USA, Canada²³ and Europe.²⁴ At that time, heterogeneous ‘medical schools’ used questionable methods and standards to train physicians in North America.^{25–28} Flexner advocated establishing more stringent admission criteria, requiring basic science studies prior to clinical medical education, centralising medical education to university hospitals, and instituting full-time teachers grounded in the basic sciences at medical schools.^{23 25–29} In short, his credo at the time reads as direct opposite of the current movement towards teaching in DLE today.^{3 5 18 30} Flexner’s ideas of a scientific base and bedside teaching were deemed universally applicable and shaped ideas on the quality of teaching for a global medical curriculum.^{17 31} This is also referred to as ‘post-Flexner’ curriculum.^{26 32}

Bleakley postulated that post-Flexnerian terms used in the current global debate on the medical curriculum, such as ‘core competencies’ and ‘standardisation of teaching’, when analysed through a postcolonial perspective, promote Western values even though the promoters of such discourse acknowledge the need to respect local differences and celebrate diversity.^{31 33}

Postcolonial studies promote critical thinking about globalisation. Essentially, post-colonial theory binds the aftermath of South Globe’s colonial liberation in the 1960s and 1970s (ie, India, Algeria, Angola, Mozambique) to the exponential expansion of capital in the 1980s and 1990s. It postulates that the Global South’s direct colonial rule by the North Globe was replaced by an economic, cultural and political dependency on the North Globe.^{34 35} De Alva³⁶ decoupled the term postcoloniality from formal decolonisation because people living in both once colonised and once colonising countries are still subject to the mechanics of global capitalism.

Resilient, evidence-based approaches or best practices for transforming curricula from a ‘post-Flexnerian’ curriculum to one that follows community HC needs and integrates training instruction in DLE are scarce.^{22 37} The authors of the present work are course administrators for DLE in Brazil and Germany. An initial discussion was prompted by a lecture for medical students given by FTB and RK in 2019 during a study visit by FTB at the Institute

for General Practice and Interprofessional HC at Universitätsklinikum Tübingen (UKT). The lecture comprised a short presentation of DLE in each country’s respective context. On further exploration of contrasts and similarities among the lecturers and students, several topics emerged that were of potential interest to educators and health policymakers globally.

This study aims to (1) describe DLE in the context of current medical curricula with a focus on sociohistorical influences and (2) derive ideas for planning and implementing DLE in ‘post-Flexnerian’ medical curricula that take such influences and current health system needs into consideration.

METHODS

This study is designed as a qualitative cross-national Comparative Education Research study^{38–40} that compares cases of curricular change management from Brazil and Germany in three consecutive steps:

Writing cases and establishing a mutual understanding of the cases

Cases are written by each nation’s team. Authors from the Institute for General Practice and Interprofessional Healthcare at UKT are RK, HS and SJ. RK is the head of teaching at UKT and course manager for DLE at UKT. He has worked as a GP in a remote region of Sweden. SJ is a GP, has worked in an urban area in Germany, and is the chair of the institute. HS is a physician and HC researcher with working experience in the Netherlands.

The Collective Health Institute of Universidade Federal Fluminense (UFF) team consists of FTB, LVS, LK and CM, all public health specialists. FTB focuses on cross-national qualitative analysis; LVS works in medical sociology and epistemology; LK’s research involves cross-national medical curricula comparison; CM has investigated teaching practices in HC training.

HF is a GP and has working experience with underserved populations in both remote and urban areas of the United States but in neither of the two contexts addressed here.

Each team narrates their experience of managing curricular reforms to establish more practical training in DLE in their own socio-cultural context. The narratives act as subjective representations of the writers’ experiences as course managers and explain the context of the respective country.^{20 41–44}

The narratives are then sent as a Word document via email to the other team, who responds with comments and questions on points that need clarification. The commented version of the text is sent back to the original author team and revised. This process is repeated until both teams agree on reaching a mutual understanding. This process is complemented by telephone and video calls.

In writing the narratives and the following comparison, the authors assume a postcolonial perspective.^{15 33 34 36}

Even though there was no formal colonisation of South America by Germany, both countries represent different global epistemologies and have been affected by their history as colonisers (Germany) and colonies (Brazil). Methodologically, the postcolonial perspective is used by the authors irrespective of each nation's postcolonial legacy: rather than focusing on respective legacies, we seek to find common ground in discovering challenges in teaching curricula.³⁶

Based on the postcolonial mindset, we focus on four central cross-national agreements, followed throughout the writing process and comparative analysis: First, social welfare structures, communities and GP practices are viable settings of medical training within the HC system. UFF refers to those settings as 'real'⁴⁵ training scenarios, UKT calls them 'DLE'.⁷ In contrast, state-of-the-art medicine in university hospitals and research centres is referred to as 'ideal' (UFF) and 'central' (UKT) medical training. Second, in these training settings, HC providers are the primary mentors and facilitators of learning, as described by Worley *et al.*⁴⁶ Third, the focus of training efforts in real/decentral settings is to bring about HC practitioners who provide HC that also satisfy population health needs. Fourth, both institutes believe in a holistic view of medicine that integrates specific social contexts and emphasises the humanity of individuals.

Developing a set of categories for systematic comparison

Step two involves three authors (HF, RK and FTB) developing a category system as a framework for comparing both cases. First, RK and FTB derive a set of categories from their personal experience as DLE course managers by email correspondence, commenting and reviewing. These categories are refined and expanded on inductively by reading both narratives, highlighting similarities and differences. The draft of the category system is sent to all authors for revision and to ensure completeness. Disagreement and uncertainty are solved by discussion via video conferencing. HF reviews the categories for language and clarity.

Systematic comparison

This mutually agreed on category system provides the basis for structured comparison⁴⁰ of both narratives in step three. Each nation's team highlights the points of interest provided by the categories of the framework. The result is a comparison of key points concerning the implementation of DLE in post-Flexnerian curricula in both contexts. HF acts as an editor of the final manuscript.

The study was initiated in a personal meeting in November 2019 between FTB and RK. Work on the narratives and the category system continued via email until September 2021. Fifteen revisions of the narratives and the category system were discussed. A manuscript was finalised in November 2021 and submitted for peer review. Correspondence was performed via email and later supplemented by video conferences when needed.

A final revision of the narratives and categories was completed in response to reviewer comments in February 2022.

RESULTS

First, the narratives are presented (step one of the study). The references to the narratives are attached as online supplemental file 1.

Curricular change management to counteract social inequalities in Brazil

Critical public health thinking in Brazil succeeded in proposing a communitarian alternative to the Flexnerian medical curriculum in the wake of the Latin American Social Medicine movement throughout the 1970s. This movement created political leverage for HC reform toward universal and equal access to HC systems. It was clear to HC reformers that a medical curriculum should encompass social and environmental topics and practices to overcome stark health inequalities in Latin America.

The overlapping adjustments to both the HC system and the medical curriculum are characteristic of Brazil's HC reforms: programmes such as the Integrated Healthcare Training (Programa de Integração Docente Assistencial), launched in 1981, served to establish practical experiences in communities and Health Centres (Centros de Saúde) for undergraduate courses.

Curricular reforms have followed the implementation of the Brazilian Unified HC System (Sistema Único de Saúde, SUS) from 1988 onwards. SUS is a 100% tax-funded universal HC system established to help address socio-economic inequalities in Brazil. To fulfil this task, SUS implemented the Brazilian PC model called 'Family Health Strategy' (*Estratégia de Saúde da Família*) in 1994. This community-based PC programme covers 75% of the Brazilian population. It is financed by cooperative federalism (at federal, state and municipal levels). Communal health teams consist of nurses, community health workers, and physicians. The teams provide HC services, including maternal and child HC, chronic disease management, and health promotion and prevention.

Brazil has been facing physician shortages, especially in vulnerable and poor areas. The outskirts of major cities and the remote areas particularly lack GPs.

SUS has a constitutional mandate to organise HC training in Brazil. Fueled by Latin American calls for HC reform in the 1970s, there had been longstanding discussions at UFF to reform the medical curricula. Even before the introduction of SUS, the UFF reform had pursued the goal of developing local HC capabilities to expand public provision of care. UFF's scholars worked as champions for implementing local public HC structures in Niterói. This commitment to local HC services is a topic of ongoing discussions with medical students, with some considering it rewarding, whereas others regard it 'a waste of time'.

Box 1 Real scenarios of medical practice framework, Universidade Federal Fluminense university (UFF), Niterói, Brazil, 1994

Principles of UFF curriculum reform 1992

- ⇒ Collaboration between university, community, and healthcare providers.
- ⇒ Formulation and development of public health policy at the municipal level.
- ⇒ Construction of a national database to aid analysis of health patterns.
- ⇒ Development of experiences and pedagogical methods in community-based teaching.
- ⇒ Support for popular education movements that champion the right to health and the construction of Sistema Único de Saúde.

Principles of Interface between medical curriculum and healthcare services

- ⇒ Didactic and pedagogical methods.
- ⇒ Community experiences.
- ⇒ Utilisation of technologies to develop medical skills.
- ⇒ Emphasis on ethical aspects in medical practice.
- ⇒ Reflection on medical work and professional work processes.

Organisational guidelines for practices in real scenarios of practices

- ⇒ Organising teaching based on populations and well-defined territories.
- ⇒ Assessing the population's perception of the health-sickness process.
- ⇒ Inquiring about demographic and living conditions, with the elaboration of risk maps (socioenvironmental risks) and problems raised by the community.
- ⇒ Incorporating a history of social movements and their institutionalism.
- ⇒ Studying morbidity-mortality profiles both locally and municipally.
- ⇒ Encouraging the evaluation of local healthcare facilities.
- ⇒ Evaluating educational practices used in community-based teaching.
- ⇒ Assessing healthcare processes as part of teaching and mentoring.

Implementing the new SUS during the 1990s in Niterói fostered the political will to integrate the medical training with HC services. The curriculum reform lasted 2 years (from 1992 to 1994), led by the Collective Health Institute of UFF. Its general principles are outlined in [box 1](#) below.

The Reformers were a group of UFF researchers who had worked in the HC system before the start of SUS in Niterói (UFF headquarters). They advanced UFF's curriculum change and the SUS implementation in Niterói and neighbouring cities. Some established medical faculty did not get involved in the debate of curriculum reform. While this 'abdication' expressed political resistance to the reform, it also allowed it to happen as these faculty neither engaged in the debate nor created active barriers.

In 1994, UFF completed its medical curriculum reform, in practice until now. The reformed curriculum comprises a Theoretical Demonstrative Programme (TDP) that aligns with a Practical-Conceptual Programme

(PCP). The curriculum emphasises a teaching path from theory towards practice. Practice-oriented class hours increase until the eighth semester. A 2 year long Internship Programme follows.

The PCP is the 'real' practice scenario. It incorporates the disciplines 'Supervised Fieldwork', 'Health and Society', 'Health Planning and Management' and 'Epidemiology'. The last three create spaces for conceptual-theoretical discussions to promote interfaces among aspects of epidemiology, medicine, psychology, culture, society, HC planning and management. The TDP intensifies professional training with biomedical science and preclinical and clinical disciplines. Real training scenarios guide the students' comprehension of integrated HC.

UFF's reform initiated a continuous evaluation process through yearly curricular conferences. With regard to 'real settings', the assembly, consisting of professors and students, debates challenges for HC services and their impact on learning. Course coordinators use conference reports for the adjustment process of the respective courses.

UFF's experience served as a benchmark for the national guideline for medical training in Brazil³⁷ released in 2001. In 2013, the country launched the More Physicians Programme (Programa Mais Médicos) to address the shortage of physicians in the most disadvantaged areas. Following suit, in 2014, the Ministry of Education updated the national guideline for medical training. The update reinforced the goal of training health professionals in SUS and bolstered up training goals that comprised health surveillance, management and education on structures of SUS.

Despite the efforts toward an integrated curriculum at UFF, professors conduct disciplines independently with a low level of coordination within the curriculum.

Recently, UFF has been pressured by established medical school faculty to change its curriculum to adapt to international standards and thus allow for easy professional mobility.

Quality management of DLE: UKT's case

Germany has offered statutory health insurance for all citizens since Bismarck's reform in 1883. Self-governance—one of the statutory foundations of the German HC system—is employed by health insurance funds, associations of statutory health insurance physicians, and hospital operators. The Federal Ministry of Health and Medical Education is responsible for the management and supervision of this structure. Over the last years, the number of GPs decreased compared with other medical specialists working on an outpatient basis. The result is an oversupply of specialist HC services. Germany also faces a pronounced demographic change towards a more ageing and multimorbid population and, consequently, a change in HCS demand. Also, there are considerable regional, infrastructural and social HC disparities.

Most German curricula adhere to a post-Flexnerian structure with 2 years of basic scientific training, 3 years of

Table 1 National standards on family medicine training in Germany as provided by the medical licensure act of 2002

Training	Duration	Mandatory	Placement in curriculum
Family medicine clerkship ('Blockpraktikum')	2 weeks	Yes	8–10th semester (second or third clinical year)
Clinical elective 'Famulatur'	4 weeks (16 weeks total)	One of four clinical electives in a GP practice is mandatory	Clinical years (1–3)
Practical year training in family medicine	3 months	No	Final year/Internship ('Praktisches Jahr')

GP, general practitioner.

clinical training and a practical 'final year' as unlicensed registrar. German medical faculties are mostly situated within university hospitals where the majority of clinical training occurs. University hospitals deliver highly specialised medical care within different medical disciplines (cardiology, neurology, ...). Each discipline contributes independently to the medical curriculum. Although the dean's office organises and arranges the contributions, the contents are only loosely defined in the medical licensing regulations. This situation leads, in part, to fractured curriculum content with much emphasis on state-of-the-art diagnostics and therapeutics for low-prevalence diseases. Cost-effectiveness, intersectoral and interprofessional cooperation, and public health and prevention are underrepresented in the curriculum. Within this context, aspects of primary HC have historically been taught by family medicine departments.

A reform of the medical licensure act in 2002 introduced three training opportunities in GP practices that have been in place ever since (see [table 1](#)). The clerkship and final year training usually combine central seminars (such as case discussions, organisational meetings) with workplace experience in GP practices. The practices must meet specific structural characteristics, such as a certain number of patients per year and a broad PC-oriented medical spectrum. The university places medical students in affiliated GPs' practices for 2-week clerkships.

Following the medical licensure act reform from 2002, new 'model curricula' focused on training in DLE were developed. These model curricula introduced a competency-based curriculum, interprofessional training, and more practical and longitudinal training in DLE.

The declining number of GPs and the expected demographic changes in German HC are explicitly addressed in a curricular reform, the 'Masterplan Medical Education 2020'. It represents a historically unique amalgamation of politically desired structural goals in medical education (implicitly, 'produce more GPs') together with an agenda for curricular reform and innovation, based on the lessons learnt from the model curricula. However, some stakeholders have criticised this amalgamation, arguing that focusing on practical skills and HC needs jeopardises medicine's scientific 'essence' during studies. The Federal Ministry of Health is currently working on

a new version of the medical licensure based on the 'Masterplan'. Key points are shown in [table 2](#).

The UKT curriculum has a few points of contact with DLE for the approximately 160 medical students each semester. So far, the institute is the only provider of clinical training in DLE at the medical faculty. All other disciplines train students exclusively in a university hospital setting. A 2-week family medicine clerkship in GP practices is mandatory for all students in the tenth semester. Students can also attend optional seminars on humanities, differential diagnoses in general practice, PC aspects of disasters, complementary medicine and environmental health.

Student evaluations of GP practices reflect the heterogeneity of personal experience in DLE, differing by the practice, team structure, time of year and clinical scope. Sometimes, student feedback appeared to be biased or

Table 2 Planned curricular changes in Germany related to family medicine

Major topic	Point
(1) Competency orientation	<ul style="list-style-type: none"> ▶ Strengthen competency-based curricula ▶ Further elaborate NKLM with all stakeholders ▶ NKLM-based final exams
(2) Practical orientation	<ul style="list-style-type: none"> ▶ Integration of PC practices in medical education ▶ Final exam in GP practice
(3) Longitudinal tracks	<ul style="list-style-type: none"> ▶ Scientific reasoning ▶ Communication ▶ Interprofessionalism ▶ Family medicine
(4) Better representation of family medicine in the curriculum	<ul style="list-style-type: none"> ▶ Obligatory part of the medical licensure exam. ▶ One quarter of the practical (final) year in ambulatory PC care. ▶ Establishment of PC research networks. ▶ Family medicine chairs in all universities.

GP, general practitioner; NKLM, National competency-based catalogue of learning objectives in medicine.; PC, Primary Care.

reflect prejudices acquired during experiences in university hospital training.

The introduction of family practice as an academic discipline met both acclaim and disapproval by other disciplines in the faculty. Critical faculty argued that available funds now had to be distributed among even more subjects. Additionally, training in DLE was ex-ante deemed shallow compared with central ('ideal') training, implying that both the spectrum of diseases and the quality of HC were less relevant. Nationally, there is debate on whether national examinations can be carried out in DLE, such as GP practices. Counterarguments include that the results will be too heterogeneous and examinations in DLE will be too costly.

German politicians have realised that curricular reform needs to address the impending changes in HC needs. However, implementing innovative courses that align with this reform meets the resistance of established groups, such as some faculty, medical students, and other stakeholders.

Cross-national comparison: two settings, common challenges

The narratives revealed differences and similarities that can be structured thematically. The comparison allowed for a description of DLE in the context of each nation's current medical curriculum and HC needs. Each team described their approach to integrating DLE in the curriculum shaped by their respective epistemologies: UFF focused the narrative on the social and political aspects of medical teaching (Global South epistemology), whereas UKT focused on standardisation and quality control (Global North epistemology). [Table 3](#) provides a by-country comparison of the main topics that emerged from the comparison.

DLE had defined social settings rooted in each country's social structures and HC system. These social aspects contributed to the heterogeneity of learning experiences, both cross-nationally and within the same nation. Didactic goals focused on tangible learning experiences and the development of competencies in the outpatient sector. Integration of the regional/outpatient and the university hospital/inpatient sectors was rarely addressed in the curricula, reflecting the same intersectoral problems encountered in HC. Concerning didactic goals, UFF focused on community aspects and social medicine, while UKT focused more on individual student development and standardisation of learning experiences. In both cases, acquiring those competencies required a certain mindset in students (openness, sensitivity, interest in diversity).

Besides defined didactic goals, course managers pursued implicit goals interwoven with a national political agenda—either by opposing national goals or by aligning with them. UFF promoted social change by interweaving a social reform agenda with medical education reform. The institute of general practice at UKT used its self-governance rights and national tailwinds to implement a primary care curriculum.

In both cases, course managers assumed the role of negotiators or moderators between existing stakeholders (faculty, students, politicians, local medical professionals). Examples of tensions between central and decentral entities could be identified on the local, federal, and national levels (eg, federal/state government and self-governed university). The politically and ideologically determined mission of the HC system, social inequalities, different attitudes, values and goals of the stakeholders were identified as possible causes of such tension. Also, examples of negotiations between stakeholders were described (such as student-teacher, faculty-course manager, politician-head of teaching, course manager-student).

DISCUSSION

The two cases of curricular change management revealed that the DLE and central teaching settings are inextricably linked but have a complicated relationship. The disconnect between those two sides of the same coin appears to have historical, political, and social roots. Implementing DLE training in curricula invokes complex negotiations between social groups and individuals. Flexner's concept of university-based training as ideal permeates these negotiations even today, as the term 'post-Flexnerian' implies.

By discussing the above from our perspectives, an analysis of underlying issues, concepts, and ideas for future challenges can be derived focusing on (1) the individual student, (2) negotiations with different stakeholder groups and (3) curricular development and change management:

Student experience in DLE as individual transition between theory and practice

Most students learn about the theory and organisation of the national HCS and the theory of common diseases and community and public health aspects on campus. In contrast, outpatient learning settings provide the opportunity to learn about putting those theories into practice⁶ and about regional needs affecting HC delivery.

Leaving the central learning environment and entering 'real' or 'decentral' practice scenarios is a spatial, didactical, and professional transition for the medical student. The curricular implementation of DLE should include explicitly marking transitions throughout the curriculum as learning experiences. Providing adequate supervision could ease such transitions, which may challenge the medical student's values and self-image. The supervision should encompass an awareness of the disconnect between central and DLE and of the central curriculum's influence on professional socialisation.

As other authors have stated, learning experiences in DLE provide a range of experiences from beneficial to discouraging.^{1 7} While the heterogeneity of experiences in DLE can pose risks for the individual student, managing the quality of learning experiences in DLE could turn the diversity of experiences into a benefit for

Table 3 Description of DLE in the context of current medical curricula regarding primary care competencies

Topic		Country	
Major category	Subcategory	Brazil (UFF)	Germany (UKT)
University setting	History of the discipline	Family medicine (as socially responsible medicine), established in 1994	Family medicine, established in Tübingen 2015 as independent chair
	Established medical groups	Political and economic resistance, local counter-reform movements against socially responsible medicine	Partly oppose (mostly due to competition in funding), partly support the 'new player' family medicine
Political context	National vision	1994's UFF curriculum reform inspired changes of national guidelines for medical training in 2001. The vision was to strengthen the primary care workforce by training medical students in primary care facilities within SUS.	The 'Masterplan 2020' provided a vision for curricular reforms but was debated in the public and in academic boards. The vision was to counteract healthcare disparities while improving medical education through a reform of the medical curriculum.
	Political agenda	(1) Implement SUS' mandate to organise and train its workforce, (2) counteract regional healthcare disparities especially in underserved areas by recruiting more physicians to work in SUS	Primarily to secure primary healthcare in rural settings.
	Policy making (nationally)	Universities have managerial and academic autonomy. They cooperate with local representatives and administration.	Democratically elected parties set an agenda and a goal (see above), which is then negotiated federally, regionally and in the statutory health care-related self-governance boards. Universities have managerial and academic autonomy.
	Policy making (regionally)	Medical training and practice are integrated at the public healthcare system, which is committed to local healthcare services	Medical training is provided on a contractual basis with autonomous GP practices.
Curricular reform, curriculum development	Task	Practical implementation of the legal mandate making SUS responsible for the medical education of its future workforce. This involves a dual role in managing the local public health system and teaching undergraduate health courses.	Translating the 'Masterplan' into practical, decentralised learning opportunities for medical students while maintaining high teaching quality. Providing learning experiences in rural and remote areas.
	Course manager experience	'Reformers' have been involved in both the healthcare reform and the UFF medical curriculum reform.	While the political goal provides tailwinds for the curricular reform, its concrete implementation needs to be negotiated on many levels within the self-governed structures of the statutory healthcare system. Resistance by some faculty groups is tangible.
Training scenarios/ Decentral learning environments	Social setting	Settings include SUS' healthcare facilities, social work network, public schools, government bureaus, social movements, and Non-Governmental Organisations (NGOs)	Training occurs in the context of local rural communities. 255 GP practices are associated with the university. GP practices are independent enterprises owned by the teaching physicians.
	Educational goal	From the beginning of their studies, students should have various real-world experiences in the healthcare system with an emphasis on the social context of health and healthcare.	Students should have exposure to a family medicine setting. Students should gain an insight into the role of the family physician in the German health system. They should get the opportunity to improve individual clinical competencies in this setting under supervision of a GP.
	Political goal ('meta goal')	Students should be able to understand social impact on health, how it produces health and sickness (social production theory). A connection between politics and education should be established.	Students should gain a better understanding of the needs of family medicine and local communities (independent of later career choice) Students should be given individual feedback by experienced physicians to benefit their individual personal and professional development
	Physical distance	Training is within the limits of the Rio's metropolitan region two with the cities of Niterói (515.317 inhabitants) and São Gonçalo (1.091.737 inhabitants)	Training sites are located within a radius of 39.56±27.8 km away from UKT, spanning 25 different regional counties

Continued

Table 3 Continued

Topic		Country	
Major category	Subcategory	Brazil (UFF)	Germany (UKT)
	Communication	There is a digital infrastructure, however stakeholders converse mostly personally, via Email or telephone	
	Organisation and Quality Management (QM)	Four Institutes collaborate on the curriculum: The Medicine School, the Collective Health Institute, Biomedicine and Biology)	Content and organisation of the primary care curriculum are planned by Institute of General Practice and Interprofessional Healthcare at UKT. Its implementation is coordinated with the dean's office. QM meets pronounced challenges due to the heterogeneity of the DLE.
	Common problems	Some students and teachers have difficulty understanding the curriculum proposal or openly disagree due to ideological reasons, especially on the role of real practice scenarios	Negative events occur due to teacher-student relationship and lack of feedback. Students criticise long travelling distances. Many stakeholders, including students, experience a disconnect between their prejudices about family medicine acquired as part of the hidden curriculum at the university and the national political agenda to 'strengthen family medicine'.
	Reimbursement of physician teachers/practices	All teaching is performed by SUS or University employees	GP teachers are reimbursed roughly \$30 per student per day (which is considered too little by a minority of GP teachers)
Medical students	Prerequisites (competencies and attitudes)	Students require an open mind, willingness to learn, empathy, social sensibility, and interprofessional skills	
	Student participation	Students participate actively during work-place-based learning and traditional classes, shared experiences among healthcare personnel, patients and communities, debate circles. They use art as expression	Since 2018, there is a quality circle in teaching that involves medical students in QM efforts and curriculum development. Students and GP teachers are actively encouraged to engage in decentral feedback.
	Student evaluation and feedback	Overall, there is mild support for the programme. While some students tend to give affable responses, others are more critical or harsh in their wording. Overall there is rising interest for family medicine.	Rising acceptance of family medicine among medical students as a career goal worth pursuing; on the other hand, prejudices and 'GP bashing' prevail in a minority of students.

DLE, decentral learning environments; GP, general practitioner; SUS, Sistema Único de Saúde; UFF, Universidade Federal Fluminense; UKT, Universitätsklinikum Tübingen.

all students. Indeed, a standardisation approach without reflection of individual needs and regional diversity in medical education is not suited for quality management (QM) in DLE. Rather than just homogenising DLE by measurable accreditation criteria and key teaching performance indicators, faculty should prepare students and DLE teachers for their respective roles, moderate students' transition between sectors, and provide a safe space for debriefing and peer exchange. Thus, QM in DLE requires processes adapted to the diversity of environments and stakeholders.

Negotiating with different stakeholder groups

Flexnerian thinking insists that central teaching is superior to other teaching environments, which was mostly true during Flexner's time. In contrast to developments in North America and Canada, universities were the only places for curricular medical teaching until community-based learning environments were introduced in 1980 (Brazil) and 2002 (Germany).^{28 29} In both countries, DLE have been regarded as inferior medical teaching settings. At the same time, DLE enjoy freedom in carrying out

medical teaching locally.^{5 6} While each learning environment has developed preferred methods, contents, and approaches to teaching, the only exchange between the environments was through medical students, funding, and the occasional meeting between the university and community-based teachers. Over time, the two settings have evolved apart. DLE have concentrated even more on their service to the community. They focus on 1:1 teaching, community orientation, mentoring and 'soft skills'. University hospitals have adapted more to post-Flexnerian ideas of standardisation and measurable outcomes for teaching.^{17 32 37} Both environments have been exposed to advances in medicine such as digitalisation and personalised medicine. Stakeholder groups have developed diverging attitudes, roles, norms, and teaching skills.^{6 7 37}

Currently, students, practising physicians and teachers have limited experience working between and across different HC sectors. The resulting ineffective communication and lack of exchange heavily impact HC quality on both ends of the spectrum and in the transfer between

sectors.⁴⁷ For medical students, the disconnect in teaching and HC delivery becomes palpable when transitioning and comparing their central to the decentral learning experiences. Since they are mainly socialised in central training, accepting the Flexnerian thinking that DLE are inferior teaching environments is easier than challenging the norms and values attained in the ‘hidden curriculum’.³⁰ More interprofessional and intersectoral exchange must be established in the curriculum to counteract this situation.

A postcolonial perspective on these complex tensions helps to understand a critical point: course managers who confront decentral teachers with a centrally managed curriculum and a post-Flexnerian terminology of standardisation and QM may evoke feelings of governance by a central body—in this case, the university. At the same time, community-based teachers want to be valued members of the teaching community. If they perceive prejudice against them by medical students or other university representatives (eg, expecting lower quality of HC and/or teaching in DLE), they will be hesitant to engage in a constructive exchange with the organisation they hold responsible for these attitudes. They might instead engage in bolstering their independence.

DLE course managers play a central role to all involved stakeholders in these complex negotiations between DLE educators and university hospital-based teaching. Course managers should empower all involved stakeholders by considering their perspectives and involving them in a carefully moderated change management process. Before entering DLE, students must be made aware of their potential function as ‘university ambassadors’ and be encouraged to carry a message of cooperation and curiosity instead of superiority.

Curricular development and change management: a transatlantic dialogue leads to an adaptive ‘ideal’ for medical education

UFF’s experience and approach to DLE were different to UKT’s in many aspects. Course managers at UFF made community needs a central aspect in its medical curriculum and introduced community-based experiences to medical education 20 years before Germany did. This development was rooted in Brazil’s social and HC needs, inspired by pedagogue Paulo Freire and his ideas of human liberation.⁴⁵

Brazil’s current course adapting to the Western framework risks losing some of its advances in decentral teaching. In this regard, Loomba *et al*³⁴ subsidises our critique stating, ‘neo colonialism is not just something that happens from outside a country or a people, not just something that operates with the collusion of forces inside, but a version of it can be duplicated from within individuals.’ Thus, a potential threat does not lie in an outside aggressor but in the thoughtless fulfilment of an ideology in individuals: in our example, the notion that high-tech medicine is superior or DLE offering learning experiences of ‘bad medicine for poor people’.

Global epistemologies on medical education differ—and they should. By no means have we identified a superior concept in Germany or Brazil. Our comparison reiterated that the idea of a static ‘ideal’ of medical education cannot work because it is both irresponsive to changes in HC demands and is vulnerable to the influence of socio-historical legacies, particularly if treated as the norm without proper deliberation.^{32 33 36}

Medical training needs to organically adapt to societal needs, advances in medicine, and digitalisation.³⁷ As the preceding discussion revealed, the goal of medical education is to dynamically shape competencies around integrated, patient-centred care across all sectors, including social services and prevention. Curriculum development towards a dynamic ideal should involve all stakeholders at university, national, and regional levels, mindful of each sector’s legacy but with a mutual goal to welcome diversity. Medical students could be promising bridge-builders in such an undertaking—if they are supervised and protected from being overwhelmed by the task.

One way of expressing the unique position of medical students could be to admit medical students based on the representation of socially disadvantaged groups and underserved regions⁴⁸ rather than selecting them almost exclusively by school or academic performance. That way, critical thinking based on life experience and personal socialisation could enter the much-needed discussions of HC provision for all people. At the same time, improved representation of all groups of societies in medical schools could help shape the thinking of other, perhaps more privileged students and teachers, adding to an understanding of students’ and patients’ needs from various social and regional backgrounds.

The German medical students association has already proposed an addition to the student roles summarising all of the aspects mentioned above: The role of the student visionary. The visionary medical student can be described as forward-thinking, community-oriented and attentive towards change. Medical students should be involved in implementing and executing this role in the curriculum.⁴⁹ Key questions in curricular QM should be: What has the curriculum contributed to a medical student’s future role in the community? How was the student prepared for global challenges and needs?

Strengths and limitations

Comparing our curricula was rewarding in exchanging ideas and critical reflection.³⁹ The postcolonial perspective helped to overcome legacies and instead focus on challenges and similarities hitherto not discussed, such as the socio-historical influence of Flexner’s rarely challenged ideal. The perspective helped us maintain an awareness of potential vulnerabilities of stakeholders in central and decentral training in the setting of each nation’s colonial legacy. It also led us to question our view on ‘ideal’ teaching quality, the depth to which it affects our daily practice, and how it shapes professional competencies.

The scope of our paper is limited to the comparison of our two cases and does not represent a comprehensive analysis of global postcolonial aspects in medical education. This seems worth exploring further in future research. Integrating personal experience in research has methodological limitations.⁴¹ Our own political and ethical positions influenced our perception and writing. We were mindful of the subjective nature of our discussions and emphasised reflexivity on personal experience. The analysis and presentation of the results involved challenging traditional thinking and one's own professional socialisation. The difficulties of this were mirrored in many iterations of this article. Personal contact might have eased some tension but the COVID-19 situation effectively prevented such exchange.

We want to encourage other medical educational researchers around the world to engage in such rewarding studies.

Acknowledgements We acknowledge support by the Open Access Publishing Fund of the University of Tübingen. We also would like to thank our international reviewers, on whose feedback we based a final round of discussion and revision of our results.

Contributors Manuscript draft: RK and FTB. Author responsible for overall content as guarantor: RK. Data collection: all authors, moderated by FTB (Brazil) and RK (Germany). HF: Data validation and manuscript revision. Analysis: all authors, moderated by FTB (Brazil) and RK (Germany). Funding and supervision: SJ. All authors read and approved the final manuscript.

Funding This study was funded by University of Tübingen.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval As the data of the comparison is derived from personal experience and collaboratively created, edited narratives, no ethics approval was needed for this study. All authors have consented to the publication of the experiences. The declaration of Helsinki⁴⁷ has been followed throughout the study process.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Roland Koch <http://orcid.org/0000-0002-6500-928X>

REFERENCES

- de Villiers M, van Schalkwyk S, Blitz J, *et al*. Decentralised training for medical students: a scoping review. *BMC Med Educ* 2017;17:196.
- Böhme K, Hänselmann S, Hüther W. [Family Medicine clerkship - integration of university and out-of-university teaching]. *Z Allg Med* 2007;83:247–51.
- Böhme K, Streitlein-Böhme I, Niebling W. [General practice teaching in Germany - well prepared for the changes to the Medical Licensure Act?]. *Z Allg Med* 2012;88:497–505.
- Böhme K, Kotterer A, Simmenroth-Nayda A. [Family practice as clinical elective - Solution to combat shortage of future FP-Care? Results from a multi-center evaluation]. *Z Allg Med* 2013;89:452–8.
- Huenges B, Gulich M, Böhme K, *et al*. Recommendations for undergraduate training in the primary care sector—position paper of the GMA-Primary Care Committee. *GMS Z Med Ausbild* 2014;31:Doc35.
- Raes P, Angstwurm M, Berberat P, *et al*. Quality management of clinical-practical instruction for Practical Year medical students in Germany - proposal for a catalogue of criteria from the German Society of Medical Education. *GMS Z Med Ausbild* 2014;31:Doc49.
- Koch R, Steffen M-T, Braun J, *et al*. Are we prepared for the future? A mixed-method study on quality management in decentralized family medicine teaching. *Med Educ Online* 2021;26:1923114.
- Turkeshi E, Michels NR, Hendrickx K, *et al*. Impact of family medicine clerkships in undergraduate medical education: a systematic review. *BMJ Open* 2015;5:e008265.
- Herwig A, Viehmann A, Thielmann A, *et al*. Relevance of clerkship characteristics in changing students' interest in family medicine: a questionnaire survey. *BMJ Open* 2017;7:e012794.
- Codsi M-P, Rodrigue R, Authier M, *et al*. Family medicine rotations and medical students' intention to pursue family medicine: descriptive study. *Can Fam Physician* 2019;65:e316–20.
- Green LA, Fryer GE, Yawn BP, *et al*. The ecology of medical care revisited. *N Engl J Med* 2001;344:2021–5.
- Fendrich K, van den Berg N, Siewert U, *et al*. [Demographic change: demands on the health care system and solutions using the example of Mecklenburg-Western Pomerania]. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* 2010;53:479–85.
- Hämel K, Ewers M, Schaeffer D. [Health care and regional disparities]. *Z Gerontol Geriatr* 2013;46:323–8.
- Colon-Gonzalez MC, El Rayess F, Guevara S, *et al*. Successes, challenges and needs regarding rural health medical education in continental central America: a literature review and narrative synthesis. *Rural Remote Health* 2015;15:3361.
- Lidola M, Borges FT. Negotiating horizontality in medical South-South cooperation: the Cuban mission in Rio de Janeiro's urban peripheries. *Glob Public Health* 2018;13:355–68.
- Carey TA, Sirett D, Russell D, *et al*. What is the overall impact or effectiveness of visiting primary health care services in rural and remote communities in high-income countries? A systematic review. *BMC Health Serv Res* 2018;18:476.
- Weisz G, Nannestad B. The world Health organization and the global standardization of medical training, a history. *Global Health* 2021;17:96.
- Richter-Kuhlmann E. Medical studies: blueprint for reform presented]. *Dtsch Arztebl International* 2019;116:2334–6.
- von Wichert P. Pro and cons for the development of medical education by incorporating more systematic teaching into the curriculum vs. small group education with patients. *GMS Z Med Ausbild* 2008;25:Doc72.
- Nikendei C, Weyrich P, Jünger J, *et al*. Medical education in Germany. *Med Teach* 2009;31:591–600.
- Shipengrover JA, James PA. Measuring instructional quality in community-orientated medical education: looking into the black box. *Med Educ* 1999;33:846–53.
- Winkelmann A, Schendzielorz J, Maske D, *et al*. The brandenburg reformed medical curriculum: study locally, work locally. *GMS J Med Educ* 2019;36:Doc49.
- Flexner A. *Medical education in the United States and Canada*. New York, 1910: 32. 41–50.
- Flexner A. *Medical education in Europe*. New York, 1912.
- Flexner A. *I remember: the Autobiography of Abraham Flexner*. New York: Simon and Schuster, 1940.
- Norman G. Medical education: past, present and future. *Perspect Med Educ* 2012;1:6–14.
- TN. B. *Iconoclast: Abraham Flexner and a life in learning*. eBook edition.: Plunkett lake press. Johns Hopkins University Press, 2016.
- Koch N. [The significance of the Flexner Report for medical education]. *Schweizerische Ärztezeitung* 2019;100:24–7.
- Barzansky B. Abraham Flexner and the era of medical education reform. *Acad Med* 2010;85:S19–25.
- Martimianakis MAT, Michalec B, Lam J, *et al*. Humanism, the hidden curriculum, and educational reform: a scoping review and thematic analysis. *Acad Med* 2015;90:S5–13.

- 31 Karle H, Christensen L, Gordon D, *et al*. Neo-colonialism versus sound globalization policy in medical education. *Med Educ* 2008;42:956–8.
- 32 Martin C. Reconstructing a lost tradition: the philosophy of medical education in an age of reform. *Med Educ* 2013;47:33–9.
- 33 Bleakley A, Brice J, Bligh J. Thinking the post-colonial in medical education. *Med Educ* 2008;42:266–70.
- 34 Loomba A, Etsy J, Burton A. *Postcolonial studies and beyond*. Durham Duke University Press, 2005.
- 35 Harvey D. *The new imperialism*. oip Oxford, 2005.
- 36 De Alva JJK. 'The Postcolonization of the (Latin) American Experience: A Reconsideration of "Colonialism", "Postcolonialism" and "Mestizaje"'. In: Prakash G, ed. *After colonialism, imperial histories and Postcolonial displacements*. Princeton, NJ: Princeton University Press, 1995: 241–75.
- 37 Paz HL. Academic Medicine's Critical Role in the "Third Curve" of Health Care. *Acad Med* 2016;91:613–4.
- 38 Gómez MV, Kuronen M. Comparing local strategies and practices: recollections from two qualitative cross-national research projects. *Qualitative Research* 2011;11:683–97.
- 39 Marginson S, Mollis M. "The door opens and the tiger leaps": Theories and Reflexivities of Comparative Education for a Global Millennium. *Comp Educ Rev* 2001;45:581–615.
- 40 Crossley M, Watson K. Comparative and international research in education: globalisation, context and difference, 2003. Available: [http://list-iiapiiep-unescoorg/cgi-bin/wwwi32exe/\[in=epidoc1in\]/?t2000=018482/\(100](http://list-iiapiiep-unescoorg/cgi-bin/wwwi32exe/[in=epidoc1in]/?t2000=018482/(100)
- 41 Loh J. Inquiry into issues of Trustworthiness and quality in narrative studies: a perspective. *The Qualitative Report* 2013;18:1–15.
- 42 Greenhalgh T, Wengraf T. Collecting stories: is it research? Is it good research? Preliminary guidance based on a Delphi study. *Med Educ* 2008;42:242–7.
- 43 OECD. *European Observatory on health systems policies. Germany: country health profile*. Paris: OECD, 2017.
- 44 Massuda A, Hone T, Leles FAG, *et al*. The Brazilian health system at crossroads: progress, crisis and resilience. *BMJ Glob Health* 2018;3:e000829.
- 45 Gurgel C, Martins PEM, State B. *Organisation and social thought*. Niterói: Eduff - Editora da Universidade Federal Fluminense, 2013.
- 46 Worley P, Silagy C, Prideaux D, *et al*. The parallel rural community curriculum: an integrated clinical curriculum based in rural general practice. *Med Educ* 2000;34:558–65.
- 47 Philipps A, Scheible M, Joos S, Sturm H, *et al*. The intersectoral care of cancer patients: weaknesses and strategies for improvement. *Dtsch Arztebl Int* 2021;118:795–6.
- 48 PGAd S, ACCdA P, Ad S. Socio-Economic and racial profile of medical students from a public university in Rio de Janeiro, Brazil. *evista Brasileira de Educação Médica* 2020;44:e090.
- 49 Rohr SO, Gerhard A, Schmidt F, *et al*. Thinking outside the box: students positive about visionary elective curricula in medical school. *GMS J Med Educ* 2021;38:Doc119.