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How are social determinants of health represented in German medical education?: a qualitative content analysis of key-curricular documents

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ABSTRACT

Objective The WHO Commission on Social Determinants of Health (SDH) has called for a health workforce trained in recognising, understanding and acting on the SDH. However, little is known about how current medical education prepares graduates for this challenge. This study analyses the extent to which the German medical education incorporates content on SDH.

Design Following a published protocol, in 2018, we conducted a qualitative and quantitative content analysis of three key document groups, defining and guiding what medical schools are expected to teach and what medical students are expected to know when graduating in Germany. We developed the coding system in a mixed inductive and deductive approach based on key WHO documents.

Setting Medical schools and the medical education system in Germany.

Results Important gaps exist in the representation of SDH in medical education in Germany. Between 3% and 27% of the analysed document-elements made reference to SDH and only 0%–3% of those document elements made explicit references to SDH. While some aspects were covered widely (eg, topics of occupational health, early childhood development and hygiene), other topics such as health inequalities or determinants outside of the healthcare system were not or hardly represented.

Conclusions A stronger and more explicit representation of SDH in German medical education is needed to prepare the new health workforce for current and future challenges in our globalised world and for medical schools to be socially accountable.

Strengths and limitations of this study

- The content analysis is based on a predeveloped and peer-reviewed study protocol and followed the good scientific practice for qualitative research.
- This is the first study to systematically assess social determinants of health (SDH) in medical education in the comprehensive way of analysing current key documents for medical education in Germany.
- This analysis does not cover the curricula of individual medical schools, locally developed learning materials or electives (eg, developed and run locally by committed students and teachers).
- This study does not address how a medical curriculum covering all important aspects of SDH could be developed in practice and if the applied 12 codes are sufficient to cover the broad spectrum of SDH in teaching.

INTRODUCTION

WHO has defined social determinants of health (SDH) as the conditions in which people are born, grow, live, and age and the wider set of forces and systems shaping the conditions of daily life.[1]

There is robust evidence that SDH have a strong and far-reaching impact on health at the individual and population level,[2–5] and that the observed inequalities in health outcomes between individuals and populations are for the most part attributable to inequalities in SDH.[1 6 7] Social inequity in particular has been widely recognised as a key driving factor for differences in health status—on the international, national, regional and local level.[1 8 9] Awareness of the importance of the socioeconomic status and health and the causes for the differences in risk-factors and health outcomes is important for an adequate treatment of vulnerable populations and an adequate understanding of their needs. Knowledge of and skills in the field of SDH can support physicians in their everyday practice, for example, by improving the understanding of patients' adherence to particular treatment regimens.[10–12]

Acknowledging the importance of SDH, the WHO Commission on SDH (CSDH) emphasises the necessity and advantage of a SDH-framed mind-set for health professionals. It recommends that SDH should be a standard and compulsory part of the training of medical students and other health professionals.[1]

This is in line with calls for the increased social accountability of medical schools. Social accountability is based on the idea that medical schools should address the "the priority health needs of the community, region, and/or nation they have a mandate to serve".[13 14] In order to do this, the graduates need to be "prepared as change agents for a more equitable and performing health system".[15] The Lancet Commission on medical education for the 21st century calls for competency-led curricula which prepare healthcare professionals for the challenges in the future arguing that "fragmented, outdated and static curricula are producing ill-equipped graduates".[16] Also on national level, there are recent calls to strengthen education of health professionals on SDH as part of public-health and global-health-challenges, which reflects the importance of SDH for health professionals acting in contexts of local, regional and global health inequalities.[17–19] However, little is known so far about the current role SDH play in the German medical education system. A study from the late 1990s which investigated the role of social medicine in 32 curricula of German medical schools documented a substantial neglect of this subject.[20] Compared with this previous study, relevant challenges regarding the representation of SDH in German medical curricula and exams still exist. However, ongoing reforms in the structure of medical studies as well as rising national and international recognition of the relevance of SDH constitute an important window of opportunity. To our best knowledge, no in-depth study of the representation of SDH in current medical education in Germany has been conducted.

Against this background, our study aims to answer the following questions: (1) To what extent do the national education frameworks for medical students include references to SDH? (2) Which thematic focus is currently set in the incorporation of SDH? and (3) Which strengths and weaknesses exist in the thematic coverage?

METHODS

We conducted a qualitative and quantitative content analysis of the representation of SDH in three key document groups for German medical education. The document groups we included cover what medical schools are expected to teach and what medical students are expected to know when graduating in Germany. Our analysis was based on a mixed deductive and inductive approach of content structuring and theme analysis. First, we developed a system of codes derived deductively from the CSDH-report[1] as well as other key publications of WHO focusing on SDH (for the list of codes see figure 1). Second, these codes were applied to the document groups using the software MAXQDA 12 (VERBI, Berlin, Germany). Third, the results were analysed both quantitatively (absolute and relative frequency of the codes) and qualitatively (clustering of frequent topics covered in two of the three documents). The methods of our analysis are outlined in detail in our study protocol.[21]

Patient and public involvement

Patients and the public were not involved in the design or conduct of the study.

Data sources

We analysed the following documents:

1. Germany's 'National Competency-Based Catalogue of Learning Objectives for Medicine' (Nationaler

Code / document	EXAM	GK-2	NKLM	total
1. SDH in general	11%	7%	24%	21%
2. ECD	18%	50%	16%	18%
3. Living conditions	14%	15%	6%	8%
4. Employment & work	29%	15%	5%	9%
5. Social protection	8%	0%	4%	4%
6. UHC	17%	13%	34%	30%
7. Health in all policies	0%	0%	1%	1%
8. Financing of social services	3%	0%	2%	2%
9. Role of markets	0%	0%	0%	0%
10. Non-discrimination	0%	0%	7%	5%
11. Political empowerment	0%	0%	0%	0%
12. Global governance	0%	0%	0%	0%

Figure 1 Relative distribution of applied codes. The figure shows the relative number of the twelve applied codes and their distribution across the examinations, the GK-2, the NKLM. Relative refers in this case to the share of each code out of all codes applied to the specific document groups (EXAM, GK-2, NKLM) as well as to the share of all codes applied across the three documents. ECD, early childhood development; EXAM, Zweiter Abschnitt der Ärztlichen Prüfung; GK-2, Gegenstandskatalog für den zweiten Abschnitt der Ärztlichen Prüfung; NKLM, Nationaler Kompetenzbasierter Lernzielkatalog Medizin; SDH, social determinants of health; UHC, Universal health coverage.

Kompetenzbasierter Lernzielkatalog Medizin) (NKLM).
The NKLM was developed by the German Association for Medical Education and the German Medical Faculty Association, adopted in 2015 and is currently under revision. The NKLM states the profile and competencies for every student graduating from medical studies. The content of the NKLM is structured into three levels: competencies (level 1), subcompetencies (level 2) and learning objectives (level 3). Practical examples substantiate these three levels.

2. The Content Catalogue for the Second Part of the Examination of Doctors, provided by the German Institute for Medical and Pharmaceutical Examination Questions (IMPP) (IMPP Gegenstandskatalog für den zweiten Abschnitt der Ärztlichen Prüfung) (=GK2). The IMPP-GK2 is the content framework for the national medical licensing examination, a nationwide examination covering the content of the clinical phase of medical studies, which the students are required to pass in order to move on to the final year of practical education. The GK2 document consists of three parts: (1) introduction (2) health disorders and (3) diseases and syndromes. Part ii consists of a list of health disorders in alphabetical and systematic order (eg, "depression", "diarrhoea"). Part iii lists health disorders oriented towards the systematic of the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (eg, 'A20-A28 Certain bacterial zoonosis', 'A 20 Plague', 'A 21 Tularemia', etc).
3. The full set of questions from two national medical licensing examinations (Zweiter Abschnitt der Ärztlichen Prüfung) (=EXAM), held in 2016 (the most recent examinations available at the beginning of the study), provided by the IMPP. Each EXAM consists of 320 multiple-choice questions and 12 case studies. The multiple-choice questions often provide a short contextualisation and are mostly 20–200 words in length with five options provided as answer options. The case studies are descriptions of a specific clinical case with a length between 500 and 1500 words to which around 15 questions are assigned to. For the EXAM, we calculated separately the number of questions to which at least one code was applied relative to the number of all questions ('questions' in figure 2) and the number of case studies to which at least one code as applied (to their entire length) relative to the overall number of case studies ('case studies' in figure 2).

Our study protocol provides a detailed description of these documents and their role in the German medical education system.[21] A summary of the study results focused on the NKLM contributed to the current debate on the NKLM revision process in Germany.[22]

Data analysis

The development of the coding framework is described in the study protocol by Hommes *et al*.[21] In order to

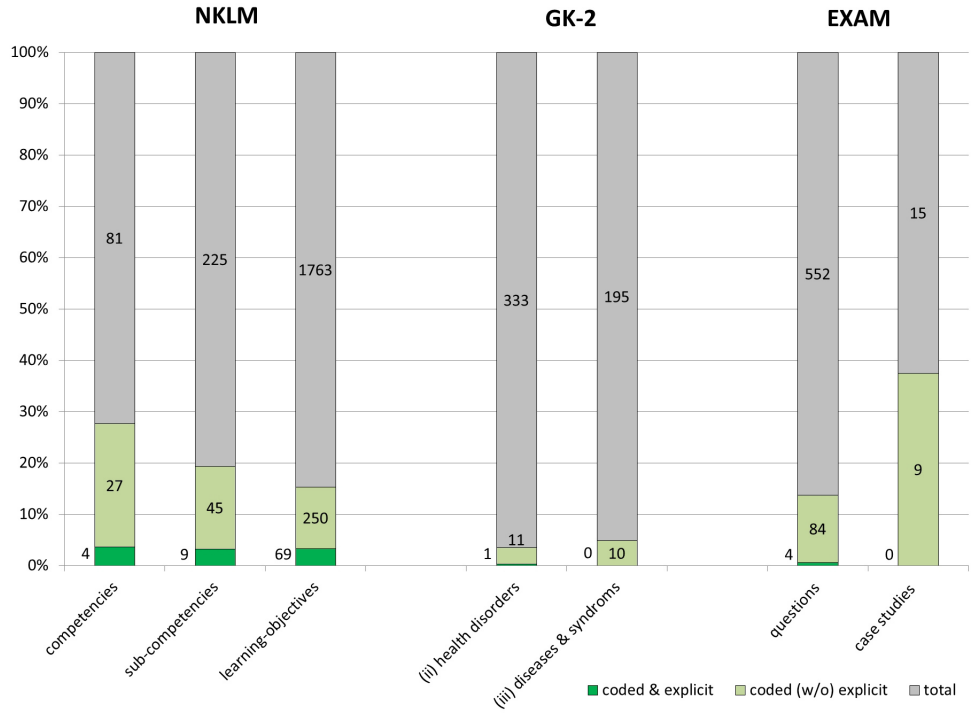

Figure 2 Number of elements across the documents containing an explicit or non-explicit reference to social determinants of health. The figure shows the distribution of elements across each of the three document types containing an explicit or non-explicit reference to social determinants of health relative to the total number of elements contained in the document. EXAM, Zweiter Abschnitt der Ärztlichen Prüfung; GK-2, Gegenstandskatalog für den zweiten Abschnitt der Ärztlichen Prüfung; NKLM, Nationaler Kompetenzbasierter Lernzielkatalog Medizin.

maximise intersubjectivity, consistency and reproducibility, we developed coding guidance in the form of definitions, an overview of key components, inclusion and exclusion criteria for individual codes, as well as general coding guidelines applicable to all codes. These documents are provided in our study protocol.[21]

The coding framework consists of 12 codes (figure 1) plus two auxiliary codes: (1) Socioeconomic status and health, to be applied to passages with reference to the interaction between socioeconomic status and health (eg, by discussing the interaction between poverty and health outcomes) and (2) explicit, to be applied to passages making an explicit reference to SDH-relevant aspects, (eg, by discussing the impact of a family environment affecting a child's access to medical services) instead of merely mentioning SDH (eg, by mentioning different social environments).

The coding frame was applied to the documents independently by two analysts using the software MAXQDA 12 (VERBI, Berlin, Germany). Unclear cases and differences in the application of the codes were solved through discussion between the analysts. After finalising the coding, these were reviewed and discussed within the research group.

For the quantitative content analysis, we assessed the absolute and relative frequency of the codes across all three data sources. The assessment of the relative frequency is based on the relevant structural elements of the respective document (eg, in the case of EXAM: the number of questions receiving an SDH-code).

The qualitative analysis of the EXAM and GK2 assessed which SDH-related topics are covered for each code and how SDH are represented in the text. Two to three authors conducted a thematic analysis of the content and context of the coded passages through paraphrasing, followed by generalising and reducing the content of each coded section and combining passages with similar content into topics. After assessing all coded passages, we discussed data saturation and assumed it to be reached.

All members of the research team studied medicine in Germany and had been exposed to parts of the data sources throughout their study. In order to reduce subjectivity and in order not to be influenced unduly by preconceptions, all authors jointly reflected, shared, discussed and documented their preconceptions regarding the research subject and expected research findings at the beginning of the research process and continued this practice throughout the coding process (see Hommes *et al* for more details).

As this study is based on the analysis of existing, publicly available data (except for IMPP exams), which does not contain personal or otherwise sensitive information, we do not expect any harm for individuals or patients arising from the conduct of our study.

RESULTS

General

In total, we coded n=893 passages across the three document types with at least one of the 12 codes. Examples for such passages containing a reference to SDH are provided in online supplementary table 1,2 in the appendix. By far, most passages were coded in the NKLM (n=716), followed by the EXAM (n=117) and the GK2 (n=60), which also reflects the length of the documents.

Most often, we applied the code Universal health coverage (n=272), followed by SDH in general (n=190) and Early childhood development (n=164). Across all documents, we did not identify any passage applicable for the codes Political empowerment or Role of markets. The code global governance was only applied in the NKLM (n=2), as was the code health in all policies (n=7).

The absolute number of codes applied over all three document groups as well as within each document group is displayed in figure 2. The distribution of codes applied varied considerably across the three documents, which is displayed in figures 1 and 2.

Figure 2 displays the distribution of codes relative to the length of the document.

National medical licensing examinations

Out of all (n=640) questions, we applied at least one code to 14% of all questions (n=88) and out of all (n=24) case studies 38% (n=9) had at least one passage with a reference to SDH. We considered 4% (n=4) of all coded questions and none of the coded case studies to have an explicit reference to SDH. We coded 3% (n=3) of the coded questions,<1% of all questions and none of the case studies in the exams with Socioeconomic status and health.

Content catalogue for the second part of the examination of doctors

Of all analysed passages (n=572), 3% (n=20) were coded with at least one code. Out of all coded passages 5% (n=1) were considered to have an explicit reference to SDH. None of the coded passages in the GK2 met the criteria for the auxiliary code Socioeconomic status and health.

National competency-based catalogue of learning objectives for medicine

Out of all (n=112) competencies, 28% (n=31) were coded with at least one code and 19% (n=54) out of all subcompetencies (n=279). Of all coded passages across the three levels, we considered 21% (n=84) as explicit and we identified 5% (n=21) passages meeting the criteria for Socioeconomic status and health. While these are relatively few mentions contrasted with the length of the NKLM, some of them were very explicit. Such as: '12.20.2.2 (The medical student) is able to explain the relationship between social inequality and health and disease'.[23]

Qualitative analysis: the most common SDH topics

In (online supplementary appendices 1 and 2), containing all codes as well as exemplary passages, we

provide an overview over the most common topics within the four most frequent codes of the EXAM and GK2, which were: Employment and work, Universal health coverage, Early childhood development and SDH in general. For instance, in the EXAM, passages referring to the SDH code Employment and work mostly addressed exposure to health-related risk factors at the workplace (57%), followed by the impact of disease on the ability to work (20%), occupational accidents and diseases (17%) and the impact of the workplace on mental health (6%). Passages in the EXAM coded with Universal health coverage most often referred to public health preventive measures and surveillance (22%), the availability and accessibility to preventive, rehabilitation and nursing services (19%) and medical guidelines in the context of quality assurance (19%). The passages coded with Early childhood development mostly contained references to the physical and psychological development of children and adolescents (42%), the social, educational and language development of children and adolescents (17%) or referred to prevention of development disorders through vaccination (17%).

DISCUSSION

Summary

In this quantitative and qualitative content analysis, we assessed the extent to which SDH are currently represented in key documents outlining, defining and guiding medical education in Germany. We found that SDH are represented to a limited extent with considerable differences across document type and SDH aspect. The range of SDH-representation ranged from 27% out of all competencies in the NKLM to merely 4% in the GK2. Our analysis found a pronounced heterogeneity among the SDH-aspects: While some aspects of SDH, such as early childhood development and occupational health are well represented, the analysis reveals substantial gaps of SDH-aspects as well as within the codes applied. References, for example, to a health in all policies approach or non-discrimination (including gender sensitivity) in regard to access to health, are currently hardly or non-represented. Only a fraction of references were explicit or addressed the relation between socioeconomic status and health.

While the strong representation of the codes Early childhood development, Employment and work and Universal Health Coverage is to be welcomed, one has to be aware that these high scores reflect methodological approaches and decisions, in particular our inclusive definition of SDH-domains:

As chapter 3 in the report of the WHO CSDH focuses on the importance of (early) childhood development for social, economic and health outcomes in later life, we reflected this in our coding guideline as well: Most references to Early childhood development focused on physiological and pathological development patterns of children or the long-term preventive effect of vaccinations. While 'a good start in life'[1] is an important determinant for individual development, one could question the classification of developmental disorders as an SDH if the focus is purely on biomedical reasons for development deficits without referring to important social and economic determinants of childhood development; for example, are health consequences of childhood poverty, disorders resulting from preventable harmful behaviours or events during the pregnancy or the influence of a child's physical, social or family environment not or hardly addressed.

With occupational medicine being part of the medical curriculum, Employment and work was the SDH-code most often used in the EXAM. The focuses of the coded passages were symptoms and diagnosis of occupation related diseases and accidents as well as workplace related hazards. However, issues of employment, such as the interaction between health behaviour and (long-term) unemployment, the social and health consequences of informal and precarious employment, or forced labour were not addressed in the GK2 or EXAM. Similarly, the strong representation of Universal health coverage in the NKLM is mostly based on a broad representation of evidence-based medicine issues, references to institutions of the healthcare system, medical confidentiality and hygiene as part of the medical practice. While these issues are highly important, relevant omissions regarding Universal health coverage in the GK2 and the EXAM include highlighting or addressing issues of accessibility, acceptability, non-discrimination of healthcare services as well as sufficient medical and scientific quality of health services.

Important omissions

Three codes could not at all or only rarely be applied in all three documents: Role of markets, Political empowerment and Global governance. One reason could be the complexity of the concepts, which makes their operationalisation challenging. Furthermore, one could argue, that these issues are not relevant for physicians as knowledge and skills and these domains do not support the health professional in the treatment of and interaction with individual patients, and are therefore rightfully omitted. By contrast, the NKLM defines seven key professional roles a physician should fulfil in the healthcare system; of which one is the professional role of health advocate.[23] In order to improve the health of individuals as well as patient groups and populations, medical students should be trained to inter alia interact and collaborate with other health professionals, institutions and organisations of the healthcare system in the interests of patients and the general public. In order to fulfil this professional role, a differentiated knowledge about the broad social, political and economic determinants affecting the health of patients is important,[1–5 24] even if those go beyond the sphere of individual medical practice in patient healthcare. This includes knowledge of global health institutions and governance, the influence of trade and markets in shaping behaviours and environments as well as of political deprivation and participation

as political determinants of societal well-being as those are the forces and systems carving out the conditions of daily life in which people are born, grow, work, live and age. Physicians in the role of health advocates can thereby contribute to the health-in-all-policies approach as well as to Universal health coverage and the 2030-Agenda for Sustainable Development.[25–27]

Explicit SDH references

Moreover, an additional important omission revealed in our analysis is the limited number of explicit references to SDH and a lack of attention to the importance of socioeconomic status and health as well as health inequalities—both at the centre of the concept of SDH:

Only 13% of all coded passages contained an explicit reference to SDH. While the NKLM has the highest rate of explicit references (20% of coded; 3% of total), the rate of general and explicit references drops when it comes to the actual state examination questions. This is important, as the NKLM is a not a legally binding document, but aimed to guide medical faculties in the development of their curriculum. The EXAM and the GK2 form the basis on which the performance of medical students is judged on and they therefore mainly prepare for.

Social accountability of medical schools

Addressing SDH is one of the building blocks of a socially accountable medical education. In discussing how medical schools meet their social obligation, three steps can be distinguished: social responsibility, social responsiveness and social accountability.[15] Using SDH as an example, responsibility refers to an implicit consideration, for example, through courses on SDH and their impact; responsiveness would incorporate community-based activities and ensure an adequate distribution of graduates to address inequities; lastly, accountability represents the most advanced step, with societal needs at the core of decision making and agenda setting of medical schools.

Our study can only help assess the first of these steps and answer whether German medical education as a whole is socially responsible. The results outlined above show that social responsibility with respect to SDH is still poor. We do acknowledge that some medical schools offer (optional) modules that could be characterised as socially responsive. Despite notable exceptions, it is questionable how medical schools on the whole can advance to social responsiveness if the national frameworks guiding their curricula do not reflect their social responsibility.

Transferability of the findings

Whether our findings on the representation of SDH are transferable to other medical education systems is likely to depend on numerous factors within and beyond the healthcare system. For example, due to the legacy of the particular German history in the 20th century, the discipline of public health has lost influence in the German healthcare system in favour of individual medicine. It could be assumed that countries with a stronger and an uninterrupted history of public health development are likely to have a stronger emphasis on public health topics in medical education, to which SDH are central. We assume that in countries with similar healthcare systems to Germany (eg, Austria) the findings are more easily transferable.

Both the methodology of our study as well as the study results can help to inform similar research approaches in other countries and regions to explore this hypothesis. Thus, the framework can be used as a tool to assess and adapt existing (medical) curricula for a broader and more explicit representation of SDH at national and local level.

Strengths and limitations

Our study has several strengths. Our analysis is based on a predeveloped and peer-reviewed study protocol.[21] The methodology to assess the way and extent to which a topic is covered in the German medical education could be adapted to other related questions and document groups (eg, to assess the individual curricula of all medical schools in Germany). The results provide valuable insights into the current role of SDH in the medical curriculum in Germany. Because of their normative role, they also pose significant levers when intending to increase the role of SDH in the future.[21]

Our study also has limitations. For capacity reasons we were not able to conduct the analysis of four document groups, as outlined in our study protocol, but had to focus within the quantitative analysis on three and within the qualitative analysis on two document groups. Our analysis does not cover the curricula of individual medical schools, locally developed learning materials or electives, which are often developed and run locally by committed students and teachers.[28–30] Moreover, we did not discuss how a medical curriculum covering all important aspects of SDH could be developed in practice and if the applied 12 codes are sufficient to cover the broad spectrum of SDH.

CONCLUSION

Based on the findings of our study, we suggest the following approaches to strengthen SDH in medical curricula. (1) Closing the gaps. Medical curricula should not focus on single aspects of SDH but aim to encompass the broad spectrum of SDH with relevance for the future health workforce. In order to increase awareness for how SDH shape the health and well-being of patients, (2) SDH need to be addressed more explicitly. In particular, there needs to be (3) more emphasis on the interconnectedness of social status and social stratification with the health status of populations and individuals as well as on the issue of health inequalities within and between societies. In our study, for instance, many questions in the EXAM include a general introduction. Using these passages to (4) frame and contextualise questions with regard to the social reality people are

born in, grow, live and age could be a simple approach to strengthen SDH. With SDH being at the centre of public health (5), strengthening population health aspects in the medical curriculum in Germany is warranted. Greater cultural change within medical schools is needed to achieve true social accountability (6) as conceptualised in the Global Consensus on Social Accountability (2010). Education on SDH can (7) strengthen interdisciplinary learning, curriculum development, teaching and practice. The results, in combination with similar studies, should serve as a basis to develop an SDH-framework for medical curricula (8), which serves as a benchmark for all medical schools.

This study fills a knowledge gap on the role of SDH in German medical education. It provides insights for an evidence-informed approach to strengthen the representation of SDH in the medical education system in Germany and beyond. This study aims to better prepare healthcare professionals for current and future public and global health challenges. This is in line with the WHO's position that SDH should be a standard and compulsory part of the training of medical students and other health professionals.[1]

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Contributors FH and PvP conceived the study. FH and JMS developed the coding frame and FH, KG, PvP, SD and JMS pilot tested it on a sample of documents. The coding of the documents was conducted by FH, SD and JMS. The analysis was conducted by FH, KG, PvP, SD and JMS. FH and JMS drafted the manuscript with support from PvP, SD and KG. FH obtained the primary data.

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Competing interests The authors KG and SD are involved in the revision process of the NKLM. The bvmd is involved in the revision process of the NKLM as well.

Patient consent for publication Not required.

Ethics approval As the study is based on an analysis of secondary data which is for the most part publicly available, the risk associated with the study and its outcomes was considered neglectable, and as the study did not involve human subjects, no IRB approval was needed.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement The NKLM and GK2 are publicly available. The IMPP questions can be received from the IMPP on request. We provide the coding frame of the document as a supplement. Additional documents can be provided on request.

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