

Between workforce shortage and regional solutions: healthcare providers' perspectives on cross-sectoral care in rural Germany – a qualitative interview study

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Abstract

Background

Healthcare provision in rural regions is a central challenge in the German healthcare system. Structural disparities, demographic change and a shortage of skilled professionals lead to access barriers for the population. This problem is particularly evident in the districts in the federal state of Brandenburg. As part of the ProReVers project (Prospective Regional Cross-Sectoral Care Planning), this qualitative study examined the perspectives of healthcare providers on the current care situation. The aim was to identify perceived challenges as well as solution approaches to improve cross-sectoral collaboration and healthcare provision.

Methods

A qualitative study design was chosen. Fifteen semi-structured interviews were conducted with physicians and nursing professionals from outpatient and inpatient care. Participants were selected via purposive sampling to represent a broad spectrum of perspectives from five central areas of care. Data were collected between January and March 2024. The interviews were transcribed verbatim and analyzed using structured qualitative content analysis according to Kuckartz.

Results

The interviewed participants mostly described the current care situation as strained to critical. Central challenges included the shortage of skilled professionals, high workload, infrastructural deficits and bureaucratic hurdles. In addition, patients often face long travel distances, and the providers perceived an undersupply in GP and specialist care. However, the participants also named concrete solution approaches, including the promotion of interprofessional collaboration, the targeted use of digital applications and the development of integrated regional care concepts. A recurring theme was the need to systematically involve local stakeholders in planning processes in order to develop sustainable solutions.

Conclusions

The study shows that healthcare in rural regions is shaped by a complex interplay of structural, demographic and systemic factors. Addressing the existing challenges requires a holistic approach that combines innovation with established structures and prioritizes the participation of regional stakeholders. The findings will be used in subsequent project phases to inform an adaptive, region-specific care planning.

Background

Ensuring adequate healthcare in rural regions is one of the central challenges of the German healthcare system [1, 2]. Structural disparities between urban and rural areas, demographic change with an aging population and an aging health workforce, and a growing shortage of qualified professionals lead to access barriers for the rural population [1–3]. These developments are particularly pronounced in the districts of Ostprignitz-Ruppin and Prignitz in the northwest of the federal state of Brandenburg. Both districts are characterized by low population density, long travel distances and an above-average proportion of elderly inhabitants [4]. Nationwide projections by the Central Research Institute of Ambulatory Health Care in Germany (Zentralinstitut für die kassenärztliche Versorgung, Zi) estimate a cumulative deficit of around 50,000 physicians by 2040, with the greatest replacement needs in the ambulatory sector [5]. The study region is directly affected by this development: the general practice planning areas covering the two districts, Pritzwalk-Wittstock, Kyritz and Perleberg-Wittenberge, are currently classified as areas with existing or imminent undersupply, in which new practice establishments are financially supported [6].

At the same time, the German healthcare system is undergoing substantial reform processes, including the hospital reform, the shift of services from the inpatient to the outpatient sector (“Ambulantisierung”) and the nationwide implementation of digital health infrastructure such as the electronic health record [7, 8]. The strict separation of the outpatient and inpatient sectors is a long-standing structural characteristic of the German system. It is widely regarded as an obstacle to continuous, needs-based care and has particularly strong effects in regions with scarce resources [2, 9].

Against this background, sustainable and regionally tailored planning approaches are required that go beyond sectoral boundaries. The ProReVers project (Prospektive Regionale sektorenübergreifende Versorgungsplanung; Prospective Regional Cross-Sectoral Care Planning) is a consortium project of AGENON, Brandenburg Medical School Theodor Fontane (MHB), AOK Nordost, the Association of Statutory Health Insurance Physicians of Brandenburg (Kassenärztliche Vereinigung Brandenburg) and KMG Kliniken. It aims to develop a cross-sectoral planning framework for a prospective and region-specific healthcare provision in these two districts.

Healthcare providers have detailed, context-specific knowledge of the strengths and weaknesses of regional care structures. Their perspectives are essential to understand where care deficits arise in everyday practice, how cross-sectoral collaboration succeeds or fails, and which solutions appear feasible under local conditions [10]. Previous qualitative studies from Brandenburg, for example on outpatient palliative care and on the use of digital technologies in routine care, have shown how strongly care delivery in this region depends on long distances, scarce personnel resources and functioning cooperation between providers [15–17]. However, qualitative evidence on providers' perspectives on rural cross-sectoral care in Germany is still limited.

The aim of this qualitative sub-study of the ProReVers project was to explore the perspectives of healthcare providers on the current care situation in the districts of Ostprignitz-Ruppin and Prignitz, to

identify perceived challenges and care deficits, and to derive solution approaches to improve cross-sectoral collaboration and regional healthcare provision. Two research questions guided the study: (1) How do healthcare providers experience the current healthcare situation in the rural districts of Ostprignitz-Ruppin and Prignitz, and which challenges do they identify in the individual sectors? (2) How can these challenges be overcome, and which solution approaches do healthcare providers see?

Methods

Study design

We conducted a qualitative interview study using semi-structured expert interviews. A qualitative design was chosen because it is particularly suited to obtain detailed and context-related information from experts with extensive experience in their respective fields [11]. The study is reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) [12]; the completed COREQ checklist is provided in Additional file 1.

Setting

The study was conducted in the districts of Ostprignitz-Ruppin and Prignitz in the federal state of Brandenburg, Germany. Both districts are sparsely populated rural regions and form the model region of the ProReVers project.

Participants and recruitment

Participants were selected via purposive sampling to represent a broad spectrum of perspectives from five central areas of care: general practice, outpatient specialist care, inpatient (hospital) care, inpatient nursing care and outpatient nursing care. Selection criteria were defined to ensure a high level of expertise and relevance to the research topic. Potential participants were identified through the professional networks of the ProReVers consortium partners and contacted by e-mail or telephone. Recruitment was supported by the Association of Statutory Health Insurance Physicians of Brandenburg. Participants received an expense allowance of €100 for their participation. In total, 15 healthcare providers participated in the study.

Data collection

Data were collected between January and March 2024. The interviews were based on a semi-structured interview guide (Additional file 2), which was developed by the research team on the basis of the literature and the objectives of the ProReVers project. The guide contained open questions on (1) the current care situation in the region, (2) perceived care deficits, (3) challenges within the participants' own

institutions, (4) collaboration between the outpatient and inpatient sectors, (5) digital solution approaches and (6) potential solutions to improve the care situation. The semi-structured design allowed the participants to introduce their own priorities and perspectives, while at the same time ensuring a certain comparability of the data. The interviews were conducted in person or by telephone, audio-recorded and transcribed verbatim. Data collection continued until content saturation was reached, i.e., until no additional issues or new dimensions of issues emerged. Field notes were taken after each interview. Identifying information (e.g., names of towns, hospitals and practices) was pseudonymized during transcription.

Data analysis

The transcripts were analyzed using structured qualitative content analysis according to Kuckartz [11], supported by MAXQDA software (VERBI Software, Berlin, Germany). A deductive-inductive approach was applied: main categories were derived deductively from the interview guide, while subcategories were developed inductively from the material. Particular attention was paid to recurring patterns and themes. The category definitions and anchor quotations were documented in a codebook and discussed within the research team until consensus was reached. Two researchers (SM, FM) applied the final category system to the complete dataset. With this procedure, both care deficits and development potentials were examined systematically, while the openness of the scientific process was maintained. The quotations presented in this article were translated from German into English by the authors. Interview IDs indicate the participant, sector and district (e.g., I2_outpatient_GP_OPR).

Ethics

The study was approved by the Ethics Committee of Brandenburg Medical School Theodor Fontane (163112023-ANF). All participants received written study information and provided written informed consent prior to the interviews. All methods were carried out in accordance with relevant guidelines and regulations, including the Declaration of Helsinki.

Results

Sample characteristics

Fifteen healthcare providers participated in the study, of whom eight were male (53%) and seven female (47%). One participant worked in different institutions and in both districts (I6). The sample included general practitioners, outpatient specialists, hospital physicians and nursing professionals from inpatient and outpatient settings in both districts. The characteristics of the participants are shown in Table 1.

Table 1. Socio-demographic and professional characteristics of the interview participants

ID	Gender	Institution	Function	District
I1	male	Group practice	Medical specialist	Ostprignitz-Ruppin
I2	male	GP practice	General practitioner	Ostprignitz-Ruppin
I3	male	GP practice	General practitioner	Prignitz
I4	female	Hospital	Hospital physician	Prignitz
I5	male	Hospital	Hospital physician	Prignitz
I6	female	Nursing (inpatient & outpatient)	Nursing professional	Prignitz/Ostprignitz-Ruppin
I7	male	Specialist practice	Medical specialist	Ostprignitz-Ruppin
I8	male	GP practice	General practitioner	Ostprignitz-Ruppin
I9	male	Hospital	Hospital physician	Ostprignitz-Ruppin
I10	female	GP practice	General practitioner	Prignitz
I11	female	Nursing (inpatient)	Nursing professional	Prignitz
I12	female	Specialist practice	Medical specialist	Prignitz
I13	female	Nursing (inpatient)	Nursing professional	Prignitz
I14	female	Nursing (outpatient)	Nursing professional	Ostprignitz-Ruppin
I15	male	Specialist practice	Medical specialist/General practitioner	Prignitz

In line with the two research questions, the results are presented along six themes. Themes 1 to 4 describe the perceived care situation and the challenges within and across the sectors: (1) perception of the current care situation and perceived care deficits, (2) sector-specific challenges, (3) cross-sectoral challenges and patient-related factors, and (4) collaboration between the outpatient and inpatient sectors. Themes 5 and 6 present the participants' perspectives on how these challenges are and could be addressed: (5) digitalization, and (6) the shift toward outpatient care, existing care models and solution approaches.

Perception of the current care situation and perceived care deficits

The perception of the current care situation revealed a homogeneous and negatively connoted picture. In most areas of care, the situation was perceived as strained or even very poor. Some areas were described as being in dramatically poor condition, while others were still described as borderline. The participants' spontaneous descriptions of the care situation ranged from “sufficient”, “in some

specialties the supply is very good” and “so far we have been able to realize everything” to “tense”, “critical”, “dramatic”, “getting worse” and “on the verge of collapse”. Overall, a general feeling of dissatisfaction remained, because the challenges persist and medium- to long-term structural adjustments are considered necessary.

The participants perceived care deficits in a broad range of areas: primary care, neurology, otorhinolaryngology, cardiology, surgery/orthopedics, dermatology, orthodontics and dentistry, pediatrics, pneumology, psychology/psychotherapy, gynecology, urology, the therapeutic professions (physiotherapy, speech therapy, occupational therapy) and ophthalmology. Deficits in primary care were named by all participants; deficits in neurology were named by 14 of 15 participants. An overview of the perceived care deficits is provided in Table 2.

Table 2. Perceived care deficits by area of care (aggregated across the districts of Ostprignitz-Ruppin and Prignitz; n indicates the number of interviewees naming the respective deficit)

Area of care (n = interviewees naming the deficit)	GP care	Outpatient specialist care	Inpatient care	Nursing care
Primary care (n=15)	x	x	x	x
Neurology (n=14)	x	x	x	x
Otorhinolaryngology (n=8)	x	x	x	x
Dermatology (n=7)		x	x	x
Cardiology (n=5)	x		x	x
Orthodontics/dentistry (n=4)		x	x	x
Therapeutic professions (physiotherapy, speech therapy, occupational therapy) (n=4)		x		x
Pneumology (n=3)	x	x		
Psychology/psychotherapy (n=3)	x			x
Urology (n=3)			x	x
Ambulatory surgery/orthopedics (n=2)	x	x		
Gynecology (n=2)	x			x
Ophthalmology (n=2)		x		x
Pediatrics (n=1)			x	

Sector-specific challenges

Figure 1 schematically illustrates the challenges raised by the participants.

Outpatient GP and specialist care

General practitioners and outpatient specialists face a multitude of challenges that directly affect the quality and availability of healthcare. The shortage of qualified professionals was described as the most prominent problem. It leads to long waiting times, crowded waiting rooms and a lack of appointments; new patients often have to be turned away because the existing capacities are already exhausted. The participants expected a further deterioration due to the upcoming retirement of the baby-boomer generation of physicians:

"In the outpatient sector, profound changes are emerging. Many colleagues are heading for retirement [...] The boomer cohorts are retiring, and a catastrophe is looming. Particularly at the specialist level, I do not see people moving up accordingly, and we will increasingly run into problems." (I2_outpatient_GP_OPR)

The consequences are manifold: patients have to accept long waiting times, and physicians have less time for detailed consultation, counseling and treatment, because they are under pressure to treat as many patients as possible in a limited time:

"The coordination of patient flows is at times almost impossible to contain. When we open at 8 a.m., there are 20, 25 people queuing. That is a problem." (I8_outpatient_GP_OPR)

Long travel distances were described as an increasingly pressing problem. This applies both to patients, who in some cases travel up to two hours to attend a consultation (I1), and to general practitioners conducting home visits, for whom a single home visit can take up the consultation time of five to seven patients (I3). The severely restricted public transport supply makes it even more difficult for patients to reach the institutions; in some villages, bus services are limited to the school bus (I3). To fill the gap in outpatient specialist care, general practitioners take over specialist tasks and try to compensate for the missing capacities with their own expertise, which, however, reaches its limits (I10).

In addition to patient care, the physicians described a high burden of non-medical tasks, bureaucracy and documentation:

"Nowadays we do not only do the work on patients. We are quasi managing directors, we are office clerks, we are everything in one." (I1_outpatient_specialist_OPR)

"Bureaucratization, yes. Quite honestly, if you implemented everything that is demanded, you could not work at all. [...] Medicine, like many other areas in this country, is completely overregulated, also senselessly overregulated." (I2_outpatient_GP_OPR)

The economic environment was described as strained, with rising personnel, energy and rental costs as well as necessary investments in IT infrastructure (I2). The remuneration system was perceived as a structural driver of overload and undersupply: quarterly flat fees, which are paid irrespective of the number of patient contacts, create incentives for a high patient throughput and leave no capacity for acute patients:

"They practically have to replenish their income within the quarter so that they know they will have at least the same patient throughput in the next quarter. This means there is no time capacity left at all for acute patients. And then these disastrous situations occur at some front desks: acutely, highly acutely ill patients, patients in pain, are turned away and have to leave again. This remuneration that sets this hamster wheel in motion has to be fundamentally changed." (I7_outpatient_specialist_OPR)

General practitioners also described the risk of recourse claims ("Regress") as particularly challenging: prescribing above the average is experienced as a constant threat that may affect their private assets (I2, I15). Furthermore, the participants described a changed understanding of work-life balance among younger physicians. The resulting reduction of working hours further aggravates the capacity bottlenecks in regions that are already affected by the shortage of skilled professionals (I8).

Inpatient care

In the hospital sector, the main problem described was the unequal distribution of inpatient resources: not all hospital sites offer the same specialties and services, so that patients have to be sent back and forth between the sites to receive the required care (I4). Consultations ("Konsile") by office-based specialists, which used to be common practice, are no longer possible because the practices are overloaded (I4). In addition, hospitals suffer from a lack of planning security, which leads to financial uncertainty and a lack of innovation:

"As I said, we are currently paralyzed in terms of innovation, because there is investment paralysis. Nobody knows – we first have to keep the ongoing processes alive somehow and do not know where things are heading." (I9_inpatient_OPR)

One participant reported that a hospital had to close wards temporarily due to staff shortages. Furthermore, the lack of a 24/7 laboratory at all sites leads to delays in diagnostic results and treatment decisions (I4).

Nursing care

The nursing care situation was described as strained to extremely difficult, particularly with regard to the medical care of nursing home residents. An acute shortage of general practitioners increasingly burdens the healthcare of older patients in the nursing context. Many of the remaining general practitioners are close to retirement, and newly qualified physicians show little interest in working in rural regions (I6). Recruiting qualified nursing staff is also difficult, so that the work has to be organized differently, "sometimes not satisfactorily" (I13). In outpatient nursing services, staff shortages lead to the refusal of services (I6). The overload of younger nursing staff sometimes results in earlier emergency calls and, consequently, an increase in hospital admissions.

The nursing professionals perceived a large discrepancy between the legal requirements for individual medication management in nursing homes and the practical challenges that arise from them. The resident-specific ordering, management and distribution of medication was described as an inefficient and labor-intensive process (I11). The participants also reported delays in medication management due to the current communication channels, primarily fax:

"They are faxed to the general practitioner [...] You tick it off on the PC and see: again nothing has come from the practice. And so it goes day in, day out. [...] Until at some point, if you cannot help yourself otherwise, you call the relatives and say: please go to the practice and take care of it. Your mother cannot get any more tablets because they do not prescribe them to us." (I11_inpatient_nursing_PR)

Finally, communication with the on-call medical service was described as problematic, particularly in emergency situations. Obtaining medical support involves negotiations and waiting times of up to two hours on the telephone before the medical necessity is even assessed (I13).

Therapeutic care

The shortage of non-medical health professions such as speech therapists, physiotherapists and occupational therapists represents a further challenge, particularly in the inpatient sector. Nursing professionals reported waiting times of up to three months for physiotherapy appointments for residents who require mobilization after a hospital stay, so that the therapy could not take place in time (I11). In addition, it was reported that therapies often remain unprescribed because physicians do not recognize their necessity; this applies in particular to speech therapy (I13).

Cross-sectoral challenges and patient-related factors

While the challenges described above manifest differently in each sector, the participants also described developments that affect all sectors alike. Across the sectors, the aging of the health workforce was described as a significant demographic trend: an increasing number of practicing physicians retire without finding a successor (I3). In parallel, the general shortage of skilled professionals further aggravates the situation; many healthcare institutions, particularly in inpatient nursing, report difficulties in recruiting qualified staff (I13).

The participants also described patient-related factors. These included high expectations among patients, who expect permanent availability of medical services and immediate, high-quality care. This expectation was perceived as media-driven and as an additional source of pressure (I3). A further challenge is the limited health literacy of patients, which frequently leads to misunderstandings and uncertainties in treatment (I5). In addition, the providers observed a delayed utilization of medical services: patients hesitate to seek medical help at an early stage and often only consult a physician when their symptoms have already progressed, so that hospital admission remains the only option and the opportunity for an earlier and potentially simpler intervention is missed (I3).

Collaboration between the outpatient and inpatient sectors

The collaboration between the sectors was experienced differently by the participants: some described it as very good and collegial, others as difficult or poor. According to one outpatient specialist, the quality of collaboration strongly depends on the respective department and hospital (I15). The direct exchange between the sectors was perceived as particularly challenging. Outpatient providers experienced a lack of or restricted direct communication with physicians in hospitals and medical care centers (MVZ), which was partly attributed to centralized organizational structures:

"There is no personal contact with any physicians at the MVZ of [name of hospital]. They have built in a barrier themselves – you always only get through to the switchboard. As a colleague, you cannot call anyone directly." (I7_outpatient_specialist_OPR)

In the inpatient sector, it was described as challenging to manage telephone communication in the highly compressed daily routine, because calls often come at inconvenient times (I9). The interviews also showed that the communication load is unequally distributed: nursing professionals have more frequent communication needs, as medication, treatment plans and discharge processes have to be clarified with physicians on a daily basis. They experienced the communication with GP practices as inefficient when calls remain unanswered and requests have to be repeated several times (I11).

A further challenge lies in the lack of interoperability and missing interfaces between the information systems of the different institutions. Even where institutions have already switched to digital systems, missing interfaces force workarounds such as printing, photographing and re-sending documents (I4). Deficient discharge management was described as a recurring problem: patients are discharged, sometimes on Fridays, without the required medication and adequate instructions, which leads to immediate care bottlenecks in nursing homes (I11). Outpatient physicians criticized the delayed provision of discharge reports:

"Recently I again had a case where I chased after a report for 14 days [...] There are still hospital-based colleagues who do not quite see how the flow of information works best, namely in writing. And promptly. That is a bigger problem." (I2_outpatient_GP_OPR)

Finally, the participants described the lack of a consistent and coordinated treatment strategy for multimorbid patients: these patients receive treatment from various physicians, but there seems to be a lack of clear coordination and communication between them, which leads to inconsistencies in treatment and possibly contradictory recommendations (I1).

Digitalization: perceptions and potentials

In the interviews, digitalization was discussed above all as a possible answer to the communication and coordination deficits described above. The providers' perspective on digitalization reflected both

challenges and opportunities. Some participants saw unused potential in digitalization to improve the efficiency and quality of care, while at the same time describing the current state of digitalization as being “like in the Stone Age” and pointing to information losses associated with poorly implemented digital processes such as the digital sickness certificate (I4). Despite the perceived potentials, providers often face additional effort when introducing and using digital technologies, as the implementation of new systems requires time and resources for training and adaptation (I12). In addition, digital solutions were described as potentially costly; one nursing service manager reported that the WLAN connection alone for her facility would cost approximately €100,000 (I6).

The participants also pointed out that digital technologies alone cannot solve all problems, that an excessive emphasis on digitalization as a cure-all may create unrealistic expectations and neglect social and interpersonal aspects of care, and that over-digitalization, with too many parallel systems and data volumes whose validity can no longer be verified, can increase rather than reduce the workload (I9).

Four digital applications were named that could potentially be used in regional care: (1) digital tools for patient management in practices, (2) cross-sectoral access to patient data, (3) the electronic health record (elektronische Patientenakte, ePA) as a central tool for capturing, storing and sharing patient information, and (4) monitoring systems in nursing care for the continuous documentation of residents' health status. Existing telemedical approaches in the region included tele-radiology (I4), a dermatology app that enables a specialist assessment based on transmitted images (I4), and video-based patient case conferences between nursing homes and neurologists (I6).

Shift of care from the inpatient to the outpatient sector (“Ambulantisierung”)

The shift of services to the outpatient sector was seen as offering potentials but also considerable challenges. A central concern was the practical implementation, particularly with regard to remuneration and workload. The participants questioned how additional outpatient services could be provided by a workforce that is already working at full capacity, without a corresponding strengthening of the outpatient sector:

“I cannot treat more patients if I know that I will not be remunerated. And we are already doing piecework. We practice piecework medicine. [...] I do not know how the shift to outpatient care can be implemented in practice. Because it must be accompanied by a corresponding strengthening of the outpatient sector.” (I1_outpatient_specialist_OPR)

From the perspective of the general practitioners, a major challenge is that they often do not have the possibility to adequately continue treating patients after ambulatory surgery. Patients return with long lists of recommendations that exceed the GPs' budgets and capacities, and the GPs feel exposed to justification pressure and to doubts about their professional competence (I3). The follow-up care was also viewed critically: the inadequate infrastructure and support for appropriate post-interventional care

lead to an increased risk for patients and to legal uncertainties for the treating physicians, who fear prosecution in the case of complications occurring 50 kilometers away (I9). The lack of follow-up structures also promotes a “revolving-door” phenomenon, in which patients are repeatedly admitted to hospital via the emergency services (I5).

Moreover, the participants considered a blanket application of measures to shift care to the outpatient sector inappropriate for rural conditions. Approaches that may work in urban areas cannot be transferred directly to sparsely populated regions: in contrast to metropolitan regions with short distances and functioning taxi services, the study region, with a catchment area of 80 to 100 kilometers, an old population and at times no available taxis, does not fulfill the preconditions for outpatient interventions that require several visits (I9).

Nevertheless, the participants also named conditions under which the shift could be implemented successfully in the region: a stepwise implementation with intermediate targets instead of an “all-or-nothing” approach (I5), a differentiated definition of the procedures and patient groups that are suitable for outpatient treatment (I5), close coordination and communication between the providers (I7), and a 24-hour on-call service of the clinics performing outpatient interventions, so that patients have a specialist contact person in the case of complications (I8).

Existing care models and solution approaches

In contrast to the predominantly deficit-oriented accounts of the care situation, the interviews also revealed an existing regional repertoire of coping strategies. The categories for each dimension are shown in Figure 2.

The participants described a variety of cooperation structures and care models that are currently implemented in the region to counteract care deficits. These included the GP referral procedure (“Hausarztvermittlungsfall”), which enables timely specialist appointments (I10); regular cross-sectoral case conferences (I9); an established cardiology hotline (“Korophon”), which connects emergency services directly with interventional cardiologists (I9); a cooperation that grants a specialist practice weekly MRI slots at a radiology practice (I7); cross-sectoral quality circles (I5); ambulatory specialist care (ASV) for rare and severe diseases (I1); the Innovation Fund project ERWIN, in which physician-relieving tasks are delegated to nursing professionals within physician networks (I2); an on-call practice at the hospital, which relieves the emergency department (I3); the physician network MediFair with a selective contract with a statutory health insurer (I1); specialized medical assistants (I1); cooperation contracts with specialists in nursing home care (I13); ambulatory surgical care at the hospital (I15); and the telemedical approaches described above. Many providers emphasized the central role of informal cooperation based on personal contacts:

“Cooperation in the countryside works quite simply, because people know each other. [...] You can call it a network, you can also simply call it collegial relations – it is very intensive, very close. If there are problems

in one direction or the other, everyone has each other's telephone number." (I5_inpatient_PR)

When asked about solution approaches, the participants initially pointed out how difficult it is to answer this complex question ("Good heavens, I am simply a physician. These are difficult questions for me.", I1). Nevertheless, a wide range of solution approaches at different levels was named. They could be assigned to seven fields: (1) addressing demographic change, by making the medical profession more attractive for young physicians and by activating professionals who have already retired ("silver workers"); (2) countering undersupply, through more GP and specialist capacities, the promotion of training of practice staff, faster allocation of specialist appointments, the delegation of medical tasks to other health professions and the possibility of short inpatient stays; (3) countering oversupply, through patient steering, a primary care physician model with mandatory GP first contact, and the centralization of medical services, for example in polyclinic or medical center structures; (4) infrastructure measures, including the financing of patient transport, the shared cross-sectoral use of equipment such as MRI, CT and X-ray, an attractive expansion of public transport, a sustainable expansion of broadband and mobile networks, and networking with regional coordinators; (5) remuneration, including an adjustment of the uniform assessment standard (EBM), the abolition of recourse risks and simplified flat-rate billing; (6) reducing additional workload, through digitalization, the reduction of bureaucracy, a reduced frequency of health-card reading, the automated transcription of medical documentation, mobile documentation and an adapted prescription and medication management, including extended competencies for nursing professionals; and (7) improving cross-sectoral collaboration, through shared communication channels and tools, collaboration at eye level, interprofessional continuing-education networks and regular round tables, and breaking up the sectoral boundaries, for example by enabling physicians to work in the outpatient and inpatient sector at the same time.

Across all fields, the participants emphasized that it is essential to involve all providers participatively in the development of care planning:

"Always bring regional representatives on board when decisions are made. Do not think you are doing something well without asking the people affected. There must always be decision-makers involved who come from the field. [...] You must always take the actual actors into account and actively consult them – just as you are doing now." (I8_outpatient_GP_OPR)

Discussion

Main findings

This qualitative study examined the perspectives of healthcare providers on the care situation in two rural districts in Brandenburg, Germany. The participants mostly described the current care situation as strained to critical. The central challenges were the shortage of skilled professionals, high workload, bureaucratic burden, inadequate remuneration structures, infrastructural deficits and long travel distances for patients. Perceived care deficits covered primary care and numerous specialist disciplines.

The collaboration between the sectors was impaired by restricted direct communication, missing interoperability and deficient discharge management. At the same time, informal, personal networks were described as indispensable for maintaining care under the current conditions. Digitalization and the shift toward outpatient care were seen as offering potentials, but their implementation often fails due to financial, structural and regional preconditions. A central finding was the providers' call for a systematic, participatory involvement of local stakeholders in care planning.

Comparison with existing literature

Our findings are in line with national and international evidence on rural healthcare, identifying workforce shortages, an aging provider population and access barriers as core challenges [1–3, 13]. Qualitative research with medical students in Germany shows that the decision to work in rural areas depends strongly on prior rural experience and social ties [3]. In addition, a systematic review of interventions to recruit and retain general practitioners in underserved European regions indicates that single measures, such as financial incentives, are not sufficient and that combined bundles of measures are required [14]. This corresponds to the solution approaches named by our participants, combining measures on training, delegation, remuneration and infrastructure. The perceived tension between guideline-based requirements and the realities of care provision corresponds to the debate on needs-based care in structurally weak regions initiated by the German Advisory Council on the Assessment of Developments in the Health Care System [2].

The challenges in cross-sectoral collaboration described by the participants, in particular deficient discharge management, delayed discharge reports, and restricted direct communication, can be understood as everyday manifestations of the strong sectoral separation of the German healthcare system, which is well documented at the system level [9]. Our findings add a regional perspective to this debate: in rural areas with scarce resources, the consequences of this fragmentation are aggravated because there are fewer alternative providers and pathways to compensate for failed handovers. At the same time, the participants described informal, personal networks between providers as the structure that keeps regional care working. Such networks enable pragmatic problem-solving, but they depend on individual relationships and are therefore vulnerable to the upcoming generational change in the health workforce. It is therefore important to institutionalize cross-sectoral cooperation, for example through the case conferences and quality circles described by the participants, without losing its low-threshold character.

The ambivalent perception of digitalization, which is seen as a potential relief but in practice often generates additional effort, costs and data overload, is consistent with previous findings on the adoption of digital technologies in German healthcare [16–18]. In qualitative studies on digital technologies in routine palliative care in Brandenburg, healthcare professionals as well as patients and family caregivers described digital technologies as helpful for care delivery over long distances, but also reported infrastructural and financial barriers [16, 17]. Comparable barriers were identified in the implementation

of electronic medical records in German hospitals, where the adaptation of the technology to the clinical context and the involvement of all relevant stakeholders were described as preconditions for successful implementation [18]. With the transition of the electronic health record (ePA) to an opt-out model in 2025, cross-sectoral access to patient data, one of the potentials named by our participants, is currently being implemented nationwide. Whether this reduces the communication deficits described in our study is the subject of ongoing research [8]. Our findings also point to different needs among the professional groups: while nursing professionals favored shared documentation and communication tools, physicians preferred direct exchange. Digital solutions should therefore not be implemented everywhere, but where they demonstrably reduce the workload and provide added value.

In addition to structural factors, the participants named patient-related factors such as high expectations, delayed utilization of medical services and limited health literacy. This corresponds to representative survey data from Germany, according to which the majority of the population reports difficulties in dealing with health information [19]. Strengthening health literacy, as suggested by the participants, could contribute to a more appropriate utilization of services and support patient steering. The patient steering approaches and the primary care physician model proposed by the participants also correspond to the current health policy debate in Germany on strengthening primary care as the first point of contact. At the same time, the delayed utilization observed by the participants indicates that health literacy and access barriers interact: in regions with long distances and scarce appointments, even patients who are willing to seek help early may postpone doing so.

With regard to the shift toward outpatient care, our findings show that measures designed under urban conditions (short distances, available transport, younger patients) meet fundamentally different preconditions in sparsely populated regions. The stepwise, criteria-based and regionally differentiated implementation proposed by our participants is in line with international recommendations for context-sensitive health reforms [13]. The German hospital reform (Krankenhausversorgungsverbesserungsgesetz, KHVVG), being in force since January 2025, introduces cross-sectoral care facilities (sektorenübergreifende Versorgungseinrichtungen) that are intended to combine inpatient, outpatient and short-term nursing care, particularly in rural regions [7]. The preconditions named by our participants, such as a stepwise implementation, a differentiated selection of procedures and patient groups, close coordination between the providers, and a 24-hour on-call service, can inform the regional implementation of these new care structures.

Finally, the participants' call for a systematic involvement of regional stakeholders in care planning is supported by the international literature on community participation in rural health [10, 13]. At the same time, this literature shows that participation is not a panacea: it requires clear mandates, sufficient resources, and realistic expectations. Power imbalances between the actors involved have to be addressed [10]. For the ProReVers project, this implies that participatory care planning should be designed as a continuous and structured process rather than a one-time consultation, and that the results of this study should be fed back to the participating providers in the further course of the project.

Strengths and limitations

A strength of this study is the inclusion of providers from five central areas of care in two districts, covering the outpatient and inpatient sector as well as medical and nursing perspectives. The combination of deductive and inductive category development ensured both a systematic coverage of the research questions and openness to unexpected findings.

Several limitations have to be considered. Not all medical disciplines were included in the study, which may lead to a distortion of the results. In particular, the perspectives of pediatric care and palliative care were not included, although both areas are of high relevance for the design of healthcare in rural regions in Germany. Likewise, non-medical health professions such as physiotherapists, speech therapists, occupational therapists, midwives and pharmacists were not included, which leads to an incomplete representation of the current care situation. Due to the limited sample size and the selection of specific disciplines, the generalizability of the results is limited; the findings may not be transferable to other care settings or regions. Furthermore, providers who are currently and acutely affected by the challenges discussed may be overrepresented in the interviews, and the perspectives reported are subjective and shaped by personal experience and individual standpoints. Finally, the translation of the quotations from German into English may involve slight shifts in meaning, which we tried to minimize through a team-based translation process.

Implications for research and practice

The findings indicate that the development of individual new care models alone may not be sufficient to address the structural challenges. Rather, a fundamental rethinking and a comprehensive reform of care structures are needed to create sustainable solutions. Practical priorities derived from the data include (1) targeted measures to secure the health workforce, (2) strengthening interprofessional collaboration and institutionalizing cross-sectoral communication, (3) prioritizing the use cases of medication management, discharge management and shared documentation, in which the deficits most directly affect patient safety, and (4) using digital solutions in a targeted and needs-based manner, where they make sense and do not create additional effort. For research, the findings highlight the value of participatory approaches: regional care planning should systematically integrate the perspectives of providers and patients from the outset. Within ProReVers, the present results will be used in subsequent project phases to inform an adaptive, region-specific care planning.

Conclusions

Healthcare in the rural districts of Ostprignitz-Ruppin and Prignitz is shaped by a complex interplay of structural, demographic and systemic factors. The providers perceive a strained to critical care situation with deficits in primary care and numerous specialist disciplines, driven by the shortage of skilled professionals, economic pressure and fragmented cross-sectoral collaboration. At the same time, the providers named concrete solution approaches at different levels and emphasized the important role of informal networks and participatory planning. Overall, the study shows that a successful transformation of healthcare in the two districts is possible through a holistic and coordinated approach that takes the needs of all stakeholders into account and follows a balanced path between innovation and proven practices. The findings provide the empirical basis for the development of a prospective, cross-sectoral, and region-specific care planning framework within the ProReVers project.

Abbreviations

ASV: Ambulatory specialist care (Ambulante Spezialfachärztliche Versorgung); COREQ: Consolidated Criteria for Reporting Qualitative Research; CT: Computed tomography; EBM: Uniform assessment standard (Einheitlicher Bewertungsmaßstab); ePA: Electronic health record (elektronische Patientenakte); GP: General practitioner; MHB: Brandenburg Medical School Theodor Fontane; MRI: Magnetic resonance imaging; MVZ: Medical care center (Medizinisches Versorgungszentrum); OPR: Ostprignitz-Ruppin; PR: Prignitz

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Brandenburg Medical School Theodor Fontane (163112023-ANF). All participants provided written informed consent prior to participation. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to the confidentiality of the qualitative interview data but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

SM, MH and FM conceptualized the study and developed the interview guide. SM collected the data. SM and FM coded and analyzed the data; RJF contributed to the interpretation of the findings. SM, RJF and FM drafted the manuscript. All authors critically revised the manuscript and read and approved the final version.

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Figures

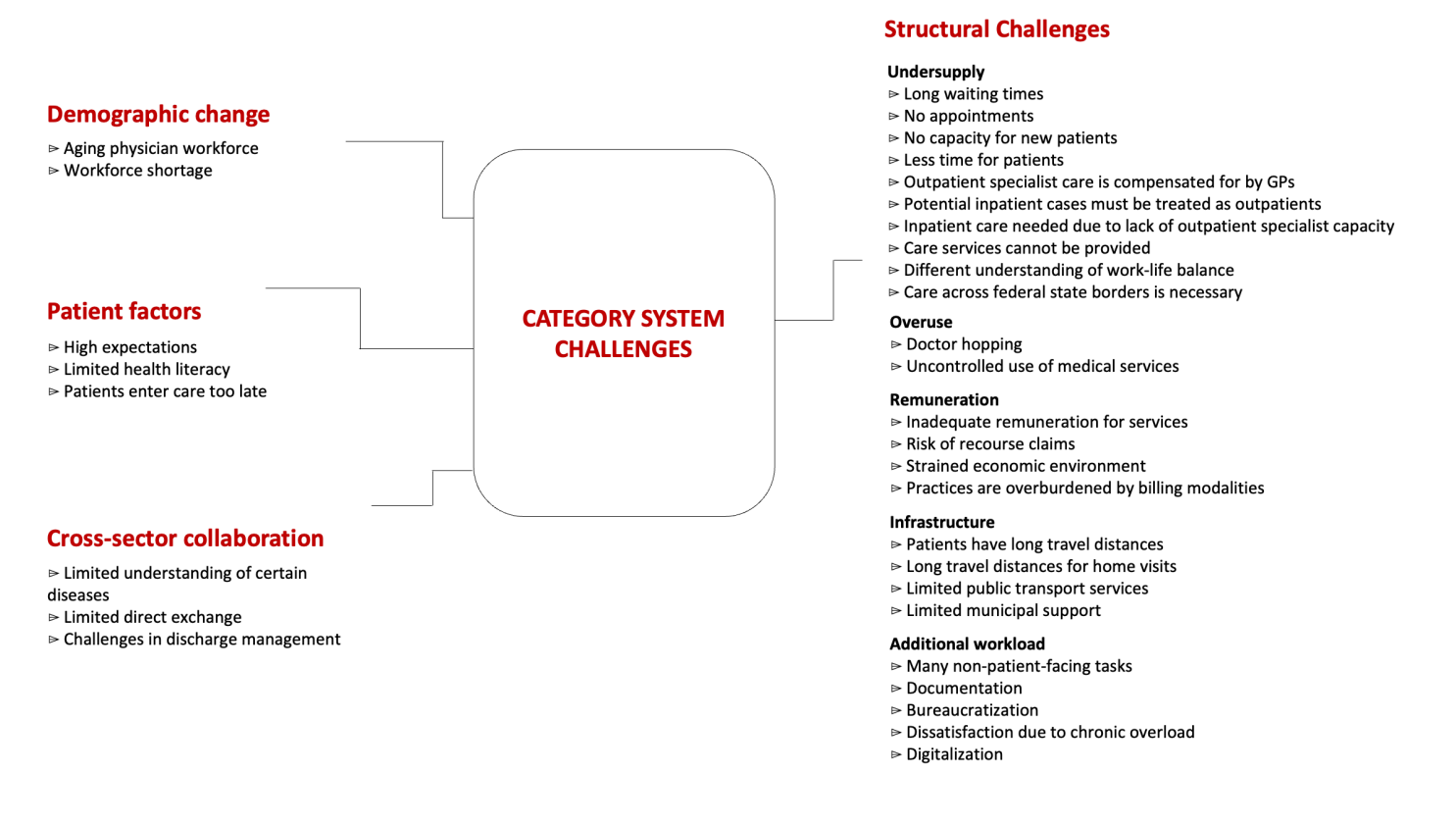


Figure 1

Coding tree of the challenges discussed by the participants

Demographic change

- Attract new talent to medicine
- Activate older workers

Patient factors

- Build health literacy

Cross-sector collaboration

- Cross-sector use of the same communication channels/tools
- Collaboration as equal partners
- Interprofessional training networks/round tables
- Breaking down sector boundaries: enabling simultaneous outpatient and inpatient work

CATEGORY SYSTEM SOLUTIONS

Structural Challenges

Undersupply

- Create more GP and specialist capacity
- Promote training of skilled professionals
- Faster coordination of specialist appointments
- Delegate medical tasks
- Short-stay inpatient admission of patients
- Secure surgery appointments

Overuse

- Patient navigation
- Primary physician model
- Centralization of medical services
- Outpatient center at hospital

Remuneration

- Adjusted remuneration of service provision
- Elimination of recourse claims (GPs)
- Adjustment of the budget or billing modalities (flat rates) (GPs)

Infrastructure

- Financing transport for all patients
- Cross-sector use of existing structures
- Attractive expansion of public transport
- Sustainable expansion of telecommunication (telephone & internet)
- Networking care providers with regional coordinators

Additional workload

- Relief through digitalization
- Reduction of bureaucracy
- Adjust the frequency of health insurance card scanning
- Transcription of documentation
- Mobile documentation (inpatient)
- Adjustment of prescription management
- Adjustment of medication management

Figure 2

Coding tree of the solutions discussed by the participants

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [AdditionalFile1COREQChecklistProReVers.pdf](#)
- [AdditionalFile2InterviewGuide.pdf](#)