Policy and Goals for Community Pharmacists' Integration into Germany's Primary Healthcare System

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Abstract

Community pharmacists' role in primary healthcare is now more important and understood in Germany. Previously focused only on medications, the new perspective for pharmacists in Germany helps them provide additional services, handle chronic illnesses, run vaccination clinics and review patient medications. Because of the 2020 Apothekenstarkungsgesetz (Pharmacy Strengthening Act), pharmacists are now being enlisted to handle common treatments, ease the burden on doctors and improve patient care. It studies how pharmacists can be integrated into Germany's healthcare team by explaining the overall system setup, help needed from laws and the policies being considered. It discusses the move to make community pharmacies central health centers in rural areas, so that health promotion, early diagnosis and adherence care become possible. Even though reforms are still at the beginning, pilot programs and backing in the Parliament are clear signs that officials are planning to change the healthcare system to make it more integrated and aligned with EU-wide trends.

Keywords: ***Community pharmacy, pharmacist practitioner, pharmacy practice innovation, primary care, collaborative practice agreements, medication therapy management, public health, healthcare access, digital health, pharmacy services integration, healthcare workforce, United States.***

1.Introduction

Germany's healthcare system is highly regarded in Europe for its broad coverage and complexity, but it also needs to adjust to modernization as well as digital progress. Being the most populated country in Europe and spending approximately 11.7% of its GDP on healthcare, Germany must continually change its healthcare structure to keep up with today's needs. In Germany, most people use statutory insurance, while higher earners have the choice of private insurance, making the system one of a kind by linking public coverage to the workings of the private sector. Allowing everyone to get healthcare regardless of their economic situation, where they live or their medical background is the goal of the system. Yet, changing demographics, technology and what patients want now mean that the classic structures behind German healthcare are no longer enough(1).

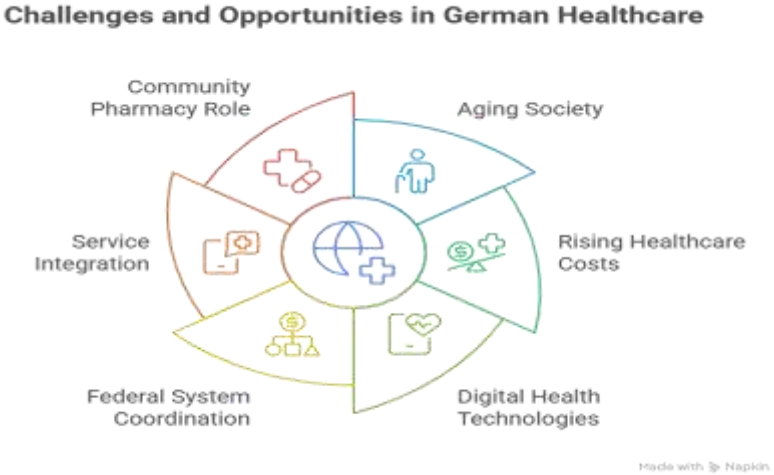

FIGURE 1 Challenges and Opportunities in German Healthcare

Currently, German healthcare must deal with several important difficulties such as an aging society that needs advanced and focused health care, health budgets that are constantly rising and needing increased coordination among healthcare professionals. Due to COVID-19, many are now recognizing the importance of digital health technologies, showing the good sides of telemedicine, electronic health records and digital communication platforms and at the same time, revealing the numerous challenges Germany faces in this area. Because Germany has a federal system, different states need to come together to work out healthcare policies that all meet their separate priorities, resource needs and abilities(2). Regional flexibility gained from this approach also leads to obstacles in making sure standards are the same and that integration between states is smooth. Also, the way ambulatory and inpatient services are kept apart over the years, supposedly for better resource division, now often hinders overall patient treatment and causes ineffective use of resources. Community pharmacies which are used mainly for dispensing medications, may face both challenges and chances to play an important role in health prevention, care for chronic diseases and teaching.

2.The growth of Digital Health Infrastructure and the combination of Telematics

Germany's modernization of its digital health services is among the biggest and most challenging programs in Europe, aimed at joining healthcare providers from primary and secondary care through a highly secure telematics infrastructure (TI). gematik GmbH is guiding this technology change at the direction of the Federal Ministry of Health, aiming to join physicians, hospitals, pharmacies and other healthcare providers through digital networks that guarantee data security and privacy for patients. Because of the telematics infrastructure, many digital medical applications are possible, including EHR, e-prescriptions and secure ways for healthcare staff to exchange information about patient care. So far, implementation has taken a slow and organized approach, joining primary care physicians at the start and gradually adding community pharmacies, hospitals and specially-serving medical centers, with the aim of concluding by 2022.

Germany's digital health strategy depends on electronic health records which offer patients digital copies of their past medical history, medicines, allergies and detailed treatment plans and these can be accessed by healthcare professionals if they are specifically authorized after two-key authorization with both health professional cards and patients' electronic health cards. Because all providers can see the same patient information, this system is meant to make care smoother, minimize medical mistakes, avoid negative drug reactions in patients and improve the delivery of healthcare in general. Electronic prescriptions are a major step in digital transformation that helps avoid medication errors, monitors if patients use their medicines correctly and provides better communication between doctors and pharmacies. Advanced features in the e-prescription system such as automatic drug interaction checking, verify how much medication is given and look at the patient's past medications, together improve medication safety and treatment success(3).

Thanks to the telematics infrastructure, healthcare providers can communicate with each other in real time, send patient information and provide recommendations through a safe system that fully complies with European data protection and German privacy laws. The capability becomes most useful for cases that involve several specialists, handling changes in a patient's care between different healthcare settings and providing continuous care for patients with long-term conditions that need frequent adjustments. The introduction of video consultation which increased during the pandemic, is now a permanent part of the telematics system, giving rural residents and those who cannot travel easy access to specialist and follow-up appointments at home. Besides, with infrastructure in place, healthcare equipment and health station technologies can connect, helping to watch patients remotely, control chronic conditions and begin medical care early.

3.Changing Pharmaceutical Care and Integrating Community Pharmacies

Pharmaceutical care in Germany has changed from routine drug dispensing to providing a wide range of services with community pharmacies playing an important role in healthcare, stressing clinical actions, overseeing any medication therapy and supporting patient care. As a result, pharmacists are now seen as important members of a healthcare team because they can see patients often, spot medication issues, check how treatments are working and ensure disease management goes smoothly. The increased delivery of pharmaceutical services is comprised of medication reviews, cross-drug interactions checks, support for sticking to prescriptions, managing illnesses and preventative measures like checking blood pressure, testing for diabetes and administering vaccinations.

Using medication therapy management programs greatly improves pharmaceutical care, allowing staff to systematically look over patients' medications to solve drug-related issues, improve treatment effects and help individuals follow prescribed medication plans through personalized advice(4). These programs bring community pharmacists and prescribing physicians together, following common protocols and ways to communicate, to give coordinated care and make any needed treatment adjustments. Every type of medication, including over-the-counter drugs, dietary supplements, herbal remedies and prescription drugs, is reviewed to look for problems such as drug interactions, use of duplicates, wrong doses or missing therapy. While conducting these reviews, pharmacists count on clinical decision, scientific evidence and patient-related details to design medication action strategies for handling problems found and continuing to measure the situation.

Connecting community pharmacies to chronic disease management plans has highlighted their ability to help patients by offering medication management and support for healthy habits at a reduced cost, especially for diabetes, high blood pressure, heart problems and respiratory diseases. When diabetes is lead by a pharmacist, programs include blood glucose testing, changing drug dosages as needed, advice on improving lifestyle and regular correspondence with the main caregiver to ensure the best blood sugar results and lower risk of problems. Similar to the earlier example, hypertension programs focus on taking blood pressure measurements using set steps, choosing the best medicines and educating patients which improves blood pressure control and cuts down on heart and blood vessel risks. Participating pharmacists are often required to get certified and learn about the nature of various diseases, different forms of treatment and how to follow monitoring strategies.

The growth of preventive services in community pharmacies gives patients easier and more accessible ways to improve their health. When pharmacists provide influenza vaccines, more people from underserved parts of the population are vaccinated. To use these programs, healthcare staff must be trained on vaccinations, emergency measures, patient assessments, use of clinical space and equipment and proper procedures to give safe and effective care. Programs for blood pressure screening rely on uniform methods of measuring pressure and referral guides to discover patients who are still undiagnosed or have difficult-to-control high blood pressure, helping them get early and proper treatment(5). Usually, these screenings use assessment tools, provide learning materials and carry out aftercare to guarantee smooth care progress and the best treatments.

4.Recent Advancements in Healthcare Policy and Future Strategies

The development of future health policy in Germany is more and more focused on methods that offer reasonable care options, improved results for patients and financial approaches that support both the rising age of the population and the continuation of universal and high-quality care. In this situation, policy innovation includes experimenting with new ways to provide care that connect various traditional healthcare fields, use digital tools to improve healthcare and stress prevention and early help to cut both the rate of disease and the expenses related to healthcare. Rather than healthcare being fragmented and mainly about providers, integrated care networks focus on making sure patients get the best care by improving communication and making sure all healthcare providers are accountable and have similar goals.

More and more, policy makers are realizing that value-based healthcare is the best way to focus on quality, efficiency and patient results rather than mainly counting how many services are provided. As a result, quality measures, performance tables and measures for outcomes are all used to assess how well healthcare efforts are performing and to guide where resources are directed. Value-based payment models must rely on advanced data management, use organized outcome standards and take into account both patient problems and external health factors when deciding on payments. Managing population health is now recognized by healthcare policies as better health outcomes depend on a mix of social, environmental, lifestyle and preventive service factors.

Artificial intelligence and machine learning technologies in healthcare can improve the accuracy of diagnosis, guide better treatment plans, boost decision-making and help lower expenses and improve how healthcare is delivered. Health technology can bolster decision making for doctors, automate simple but frequent office tasks, detect diseases early by using patterns and forecasts and give individualized treatment suggestions based on patient details. Before using artificial intelligence in the clinical setting, we must follow the rules, ethics and make sure quality assurance is in place to prevent any harm or loss of trust in these new technologies(6). If AI-powered healthcare

solutions are implemented, large sums must be spent on infrastructure, training and managing the changes to guarantee their use by healthcare providers.

Health policy makers are taking the environment and sustainability into account more than before, since they realize hospitals and healthcare centers use a lot of resources and changes can save money and help people. They include ways to use energy efficiently in healthcare buildings, decrease waste, source sustainably and support green ways of traveling for healthcare-related trips. Planetary health which highlights the link between human health and taking care of the environment, is influencing how health strategy and policies are created. In today's climate, healthcare policy must include strategies for coping with extreme weather, unexpected diseases and poor environmental conditions.

5. Network Virtualisation and Chat-Based Care

Using digital means and chat-based health services has transformed the way patients and providers communicate, share medical details, conduct calls and follow up on care in Germany. These new ways of communicating in health care cover secure messaging systems, real-time chatting platforms, chatbot services, video consultation interfaces and mobile health apps that, together, help deliver healthcare while upholding the strict privacy and data protection standards found in Germany and Europe. Chat-based healthcare services were introduced much faster because of COVID-19, due to seeing both the urgency and the ease of online healthcare.

Using secure messaging within telematics, healthcare providers are able to communicate with patients over appointments, reminders to take drugs, test outcomes, care plan recommendations and general health questions, all in accordance with rules for patient privacy and with every record automatically appearing in electronic health records. In general such platforms use encryption and authentication, watch for possible breaches and store detailed audit information to guarantee the safety and reliability of medical information. Secure messaging is not real-time, so patients can contact their healthcare providers easily at their convenience and get a response whenever helpful, making healthcare easier for people with full schedules or who prefer to write instead of talk. These tools make it possible for healthcare providers to send reminders for appointments, let patients know about their medications, provide useful preventive care tips and share content that helps patients manage their care(7).

Telehealth platforms now include live chat so that participants can exchange information, exchange documents and arrange care activities while their messages are safe and protected under healthcare communication rules. These features in chat interfaces allow users to send files, translate messages for people with limited German and connect with medical records to ensure all communications are accessible by others on the team. For real-time chat services to work smoothly, the technical system must be strong enough to sustain the connections and fast enough for convenient integration with current healthcare systems.

More and more, automated health chatbots with artificial intelligence and natural language skills are used to review a patient's situation, determine their symptoms, schedule appointments and offer health information, helping reduce administrational jobs for health staff and improving how patients can get assistance. Such systems handle regular questions, share health advice that comes from medical research, direct patients through symptom checklists and assess what treatment patients should receive based on authoritative clinical guidelines. Applying chatbots to electronic health records gives them the ability to recommend information based on patient background, what treatments they are on and any health problems. Because these tools have limits, anything involving complicated or urgent situations is quickly reported to human healthcare staff.

Introducing chat-based aspects into mobile health apps has helped patients with chronic diseases, made it easier for them to take their medicines as prescribed and increased the ways healthcare is delivered. Such applications usually offer users the chance to keep symptoms organized, remember when to use their medicines, see health-related information, become part of a peer group and chat directly with healthcare providers which in turn improves health and boosts patient involvement(8). Since these mobile applications are being integrated into the wider healthcare environment, there should be close attention to security, standards for data sharing and how they fit into the daily routines of healthcare workers to make sure their findings can be used for decisions.

6.Combining Mental Health Services with Digital Therapeutics

Germany is now focusing on joining mental health services with other healthcare delivery to support many patients whose quality of life and health care expenses have increased due to more mental health conditions. The German approach to linking mental health services is to develop coordinated care plans that close the gap between general healthcare and expert mental health services, use digital resources to bring mental health care to more people and establish wide-ranging testing and early response programs to stop mental health problems from becoming worse and more expensive. The policy framework points out that mental health and physical health often go together which supports the need for usually coordinating treatment to care for both the body and mind.

A wide range of community services continue to be built, making good health care simpler, more appropriate for everyone and less stressful for people. Apart from individual counseling, these services provide cognitive-behavioral therapy, support groups, peer assistance and crisis support, all designed to help patients based on what they prefer. To have mental health included in primary care, primary care providers are given training in mental health assessment, short treatments and ways to manage easy mental health conditions and they are encouraged to refer those needing more help to specialists(9).

They offer an alternative way for people isolated by geography, transportation, stigma or conflicting schedules to start proven mental health treatments. Examples of such digital interventions are apps that use cognitive-behavioral therapy sessions, virtual reality for exposure therapy, Internet-based therapy using experienced therapists and computer programs that assist using personal data from every user. In Germany, new rules for digital therapeutics demand that their clinical benefits, safety and data privacy are thoroughly checked before any approval is given.

Because mental health problems can be serious, developing mental health screening programs for students, workers and patients has been a main focus to help identify these problems quickly and hopefully prevent them from getting worse. They depend on instruments that measure progress accurately, established strategies and expected steps to provide help for those identified. When mental health screening is part of physical examinations, care for ongoing diseases and preventive health care, it becomes natural for people to be screened and reduces the shame many people feel about seeking mental health care.

Teams of mental health specialists, doctors and services from the community have created models to make sure individuals with long-term and difficult mental health needs are well cared for and supported. Generally, these models are carried out by teams of psychiatrists, psychologists, social workers, peer support specialists and primary care providers who work together to create personalized plans, watch patient improvement and make changes to the plan as the patient's needs evolve. Through teamwork, the approach hopes to achieve cohesive care planning, centering on what is best for the patient and lots of team communication to make sure treatment is delivered properly.

7.Supporting graduate and postgraduate education in healthcare

The new way of training healthcare professionals in Germany is a major shift in preparing and developing them to match the changing needs of today's healthcare delivery guided by technology. As part of this reform, healthcare disciplines are modernized, interprofessional learning is introduced, real and applied training is developed and ongoing learning systems are created to keep professionals knowledgeable throughout their careers. In addition to traditional clinical learning, these methods now cover teaching digital health skills, working with diverse groups, being strong communicators, leading others and using effective improvement methods in today's healthcare settings.

Efforts to improve teaching in medicine in recent years have aimed to remove the separation between basic science and clinical medicine, using case-based learning, problem-based learning and simulation training to better ready students for real-life situations in the clinic. Among these changes are greater attention to population health ideas, preventive approaches, supporting personal health and factors in the community that lead to ill health. Digital health technologies are now part of standard medical training, so that future doctors are prepared for the electronic health records, virtual consultations, AI support and other digital technologies used in their practice.

Because of changes in nursing education, more nurse practitioners, clinical nurse specialists and nurse educators now work in advanced roles to support better and more effective healthcare delivery. Nurses can now use doctoral programs to become leaders at healthcare organizations, do clinical studies and take part in designing healthcare

policies. New standards in nursing education now include evidence-based techniques, quality enhancements and teamwork with other healthcare professionals which help nurses fully participate in health teams.

Pharmacy teachers have revised their approach to training to equip pharmacists for greater roles such as providing clinical pharmacy services, monitoring medications, helping with chronic diseases and participating in preventive services. rotations in many healthcare settings allow pharmacy students to gain useful experience that helps them cooperate with other health experts. Specialist programs for pharmacy practice are now available to teach professionals about drug treatments, the study of drugs in the body, drug reference and managing diseases.

In healthcare education, students in various medical backgrounds now work together through special programs designed to help develop the skills needed for teamwork and to serve those with complex conditions. Such programs have many aspects such as partner courses, sharing clinical time, group learning tasks and simulation, to help students from medicine, nursing, pharmacy, social work and other health professions study together and become familiar with what each does. Because coordination among professionals answers the need for better healthcare, there is increased attention on teamwork.

New training and skills programs have been created to support healthcare providers in staying knowledgeable and skilled as they develop with advancements in healthcare technologies, procedures and patient care. Such programs have rules for regular courses, opportunities for industry certification, access to online schooling and support for career enhancement and quality improvement. When quality improvement and patient safety training are part of continuing education programs, healthcare staff learn what they need to do to keep improving healthcare and avoid risks to patients.

8.Conclusion and Future work

Research into Germany's healthcare transformation has found that innovation, obstacles and chances play a role in shaping the coming direction of healthcare for this significant European healthcare market. Concentrating on telematics and chat-based healthcare is helping healthcare organizations offer better care, save money, make care more accessible and ultimately make a major difference in patients' wellbeing and outcomes. The change from old, piecemeal healthcare systems to modern, online networks indicates Germany is holding onto its international leadership in healthcare innovation and the key idea of universal and broad healthcare coverage.

Computer-based and chat platforms are now changing the healthcare system beyond introducing new technology, affecting how patients and caregivers interact, how treatments are organized in various settings and how health data is used to improve responses to care. These digital tools are very useful for removing access problems, coordinating care, managing chronic illnesses and making sure patients are involved in their healthcare. The presence of secure messaging, live chat, chatbots and health apps enables a complete digital health system ensuring all forms of communication are private and secure.

Simply by bringing pharmacy resources into more local communities and encouraging them to work closely with other physicians, healthcare reach can increase and the health outcomes of patients on medicines can be consistently improved. Programs for medication therapy management, chronic disease care and preventive measures in community pharmacies have brought relief to healthcare systems and helped reduce the amount of work primary care doctors and hospitals take on. These advancements are crucial for caring for large numbers of elderly people and those with ongoing complicated diseases.

It is essential for mental health services to be blended and for digital therapeutics to be used in response to the rising recognition that mental health plays a key role in people’s overall health and well-being and these things require proper, evidence-based interventions. Growing use of team approaches, computer-based health tools and community service for mental health has made mental health care more all-inclusive and better coordinated. They show how health technology can make mental health services more accessible to people who need them and decrease stigmas as well.

It is recognized that changing technology and laws is not enough in healthcare transformation; the way healthcare workers are trained and prepared is just as important. The doctrine of teaching people from different professions, reaching digital literacy and upgrading knowledge attests to Germany’s effort to establish a healthcare team able to collaborate and provide better care in difficult situations.

Ways to Advance Chat-Based Healthcare Services

Growing the use of chat-based healthcare in Germany can inspire research, innovation and improvement in rules that ultimately help digital health communications have a bigger impact on the healthcare system. Initiatives moving forward should thoroughly analyze the end results of chat-based services, assessing how patients are satisfied, care is delivered, expenses are controlled and the health of patients changes over time in diverse healthcare situations. Analysis of how chat-based healthcare interventions work over time would reveal how best to implement them, what resources are required and what might hinder adoption so that these findings can guide policymakers and planning of new programs.

Modern developments in artificial intelligence and language processing can greatly improve automated healthcare chat services by enabling them to assess symptoms in more detail, coach health care in ways suited to individuals and better sort patients to the right medical centers or treatment options. Studying how to combine voice, image and sensor technologies with chat platforms may allow them to assess and monitor people's health more fully. If we are able to identify patients who might develop complications by their chat discussions and reported symptoms, we could act ahead to prevent risks and save on healthcare.

Future improvements in cross-cultural and multilingual communication research are particularly essential for Germany, where it’s necessary to ensure chat-based healthcare services are usable and impactful by individuals from different backgrounds and with different language skills. The creation of chat interfaces that respect culture, language support and attention to ethnic differences in health information can greatly help similar communities benefit from digital health services. Research on bringing human translators and machine translation together on chat-based healthcare apps would help guarantee accurate messages, maintain smooth operations and keep expenses low.

Keeping chat healthcare services private and secure means investigating new encryption, blockchain and zero-trust security solutions. Increasingly, we need to focus on privacy-safe ways to glean useful details from chat-related healthcare interactions.

The goal of interoperability and integration research should be to back chat-based healthcare services with protocols and data standards that support perfect integration with electronic health records, clinical support systems and various healthcare technologies. Specially developed APIs and standards for chatting with healthcare could help healthcare organizations join the efforts more smoothly and with less difficulty. Ways to combine chat-based communication into existing clinics in a manner that avoids interruptions may encourage more healthcare providers to start using it.

Unique research should look at how patients in groups such as children, the elderly, those with disabilities and those with serious chronic diseases communicate, so that chat-based healthcare services can be designed to support them better. Given the increasing need for accessible mental health help, the study of optimal design and functions for chat-based support, with eyes on crisis intervention, peer groups and chatbots, is clearly a key task for the future.

Such economic evaluations should study how chat-based healthcare affects both medical costs and general economic impacts, by looking at productivity, reduced use of health services and better health that lead to lasting economic gains. Finding best price models, reimbursement plans and value-based approaches for chat-based healthcare can help support and spread this innovative way to offer healthcare.

Studies on measuring and improving quality in chat-based healthcare services should create standard measures and systems for reviewing how effective, safe and beneficial they are, using reports from patients, quality indicators and safety routines that keep improving these services. If we use real-time systems that find problems or opportunities in chat healthcare, we can respond quickly and keep improving the quality of our services.

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Conflicts of interest

The authors have no conflicts of interest to declare

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