



# TRANSNATIONAL REPORT ON EMERGING DIGITAL COMPETENCES OF HEALTHCARE STAFF IN AUSTRIA, GERMANY, GREECE, ITALY AND LITHUANIA

May 2025



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the European Union

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## INTRODUCTION

The document is a transnational report that explores the state of digital skills in the healthcare sector in Austria, Germany, Greece, Italy and Lithuania, with a particular focus on healthcare assistants and support professions.

Through a literature review and qualitative interviews, the report identifies opportunities and challenges associated with digitalization in these different healthcare systems, highlighting the need for training and digital skills development.

Digitalisation in healthcare represents a revolution that is deeply transforming the way healthcare services are offered and accessed. In the five European countries participating in the project, the integration of digital technologies in healthcare is opening up new ways to improve the quality of care and increase the efficiency of the healthcare system.

All over Europe, people's life expectancy is steadily increasing, leading to a rising demand for care and health services. On the other hand, there is a shortage of qualified personnel. Furthermore, the place of service provision is increasingly shifting towards home-based care. This presents immense challenges, especially for healthcare personnel in long-term care. (Groeneveld et al. 2023).

Research shows that digital health solutions can boost efficiency and cut administrative workloads (OECD, 2020, p.24). The European Commission also stresses that investing in digital training for healthcare professionals is key to modernizing healthcare systems (European Commission, 2024). Yet, many initiatives aimed at improving digital literacy don't fully consider the specific needs of care and support staff, in particular in home-based care.

International literature reports that healthcare professionals are increasingly struggling to keep pace with the rapid advancement of digital technologies in the healthcare sector. The rapid growth of digital technologies is driving major changes in the healthcare sector, reshaping the roles and responsibilities of healthcare professionals. With new digital communication tools and constantly evolving tech, professionals are finding themselves needing to update and adapt their skills more often to keep up with their changing work environments.

It has been noted that digital technologies cannot fully realize their potential if users lack adequate digital competencies. (Raghunathan et al. 2023; Tischendorf et al. 2024) Jarva et al. also state that a large proportion of healthcare professionals do not fully utilize the digital possibilities in their work. (Jarva et al. 2022) A certain level of digital competence is therefore necessary to use digital technologies efficiently and effectively in a professional context.

Digital health tools, including telemedicine, remote sensors and wearables, medical apps, digitized health records, as well as personalized and predictive modelling technologies, have increasingly been integrated into care processes over the past ten years, in particular since the Pandemic spread, and are gaining growing support from patients and professionals. These major shifts have



led to growing attention on the need to educate healthcare professionals in digital health skills, while also exposing shortcomings in how curricula are designed, put into practice, and assessed.

To ensure that both current and future healthcare staff are ready to work in tech-driven environments, there is a growing global acknowledgment of the importance of integrating digital skills into healthcare workers' education and training. Despite the growing body of evidence supporting the value of teaching about healthcare digitalization, many European countries are still progressing slowly in this area.

On the other hand, there is a growing interest in the introduction and the use of digital technologies in healthcare all over Europe, which means that new strategies are needed to implement digital transformation in the healthcare system.

The Erasmus+ project “*DigiHealth – Emerging Digital Competences of Healthcare Staff*” addresses the fast-paced technological changes in elderly care by focusing on digital transformation and the need to align vocational education and training with the evolving job market. Its main goal is to enhance the digital literacy of nursing assistants and care workers with limited qualifications, aiming to close the digital gap within the care sector. By doing so, it seeks to ensure that these workers can benefit from digital innovation and gain the foundational skills needed to meet the demands of a modernized, tech-driven healthcare environment.

Let us briefly examine the peculiarities of the phenomenon of digitization in the health systems of the countries indicated above in greater detail.

## METHODOLOGY

In order to produce the reports in each participating country, data was collected both through the analysis of academic studies and interviews with key persons.

The literature review process was carried out by the German partner, who included in this work only studies published between 2019 and 2025 in order to ensure the representation of current digitalization processes in healthcare. 22 relevant studies were included in the analysis, as explained in detail in the DigiHealth Business Case.

About the interviews, between February and April 2025, guided and structured interviews were conducted in the five member countries. Teachers and institutions from vocational schools and universities, professionals from healthcare facilities, as well as care assistants and nurses, decision makers were interviewed. A total of 34 individuals participated in the interviews. Among them, 6 were from Greece, Italy, and Lithuania, 5 from Austria (as the 6th person requested not to be recorded) and 10 were from Germany. In total, 12 nurses, 10 VET teachers and decision makers, and 11 professionals from healthcare facilities were interviewed to collect data to conduct a qualitative content analysis.

## THE DIGITALIZATION OF AUSTRIAN HEALTHCARE SYSTEM



The paper presents a national report on the emerging digital skills of healthcare workers in Austria, highlighting the challenges and opportunities related to digitalisation in the healthcare sector. The report was published in March 2025 by ACCELERAS and focuses on the importance of improving digital skills among health professionals to ensure quality care.

Digital transformation is changing the healthcare industry worldwide, including Austria. Despite the use of digital tools, their potential is not yet fully exploited. The report explores how health professionals, educators and policymakers in Austria are addressing and shaping digitalisation, highlighting barriers, opportunities and potential solutions. The findings reveal that caregivers are open to the use of digital tools, but lack structured training and implementation is inconsistent across institutions, hindering consistent use in practice. In addition, digital systems are fragmented, making it difficult for institutions to navigate and collaborate. Regulations slow down innovation and limit interoperability and the adoption of new technologies. To address these challenges, the report proposes a multi-layered approach to improving digitalization in the Austrian healthcare sector, which includes increasing digital literacy through hands-on training and accessible learning materials, creating unified systems, and adapting regulations to foster innovation while maintaining data protection and patient safety. Adopting these strategies can help the Austrian healthcare sector better integrate digital tools, improving quality of care and efficiency.

Digitalization is profoundly transforming the way we live, and the healthcare industry is no exception. In Austria, the Digital Skills Initiative aims to improve digital literacy in various sectors, including health. Research shows that digital health solutions can increase efficiency and reduce administrative burden. However, many Austrian initiatives do not fully consider the specific needs of care and support staff. Projects such as DiKomp and DigiHealth focus on developing digital skills for care professionals, providing practical and inclusive training resources.

The report explores the current state of digitalization in the Austrian healthcare sector, with a focus on key initiatives, infrastructure advancements, and regulatory frameworks. Austria has made significant progress, with 64.7% of the population possessing basic digital skills, exceeding the EU average. However, a more structured national digitalisation strategy is needed. The introduction of the eCard in 2005 and the Electronic Health Record (ELGA) have been significant milestones, but challenges such as lack of interoperability and regulatory adaptation to foster innovation persist.

The COVID-19 pandemic has highlighted the challenges in health data security, highlighting the need for a balance between flexibility and security. The rapid growth of patient data presents significant challenges to the effectiveness of collaboration between healthcare providers, accentuating the need to find solutions for interoperability and regulatory frameworks.

The GDPR provides a legal framework for data security across the EU, but Austria has adopted additional national regulations to address the specific needs of the healthcare sector. The Austrian Data Protection Act sets stricter rules for the handling of sensitive data, while the Health Telematics Act ensures secure handling of health data.



Challenges in digitizing the healthcare sector include gaps in digital skills among professionals. Despite the fact that 63% of the Austrian population possesses digital skills, 37% remain without these skills. Significant disparities exist between different age groups and geographical areas. The DiMiCare report highlights that less qualified caregivers face difficulties in integrating digital tools due to insufficient training.

The European Interoperability Framework supports the uptake of digital health technologies, promoting a more connected health system and facilitating international cooperation. The implementation of the European Health Data Space (EHDS) is a key initiative to improve the use and exchange of health data in Europe, but Austria faces significant challenges in aligning with these regulations.

Recent reforms in health education in Austria have focused on increasing training capacity but have not adequately addressed the growing need for digital skills. Digital skills remain largely underdeveloped in educational programs.

## THE DIGITALIZATION OF GERMAN HEALTHCARE SYSTEM

In recent years, the German healthcare sector has focused on digitalization, making digital skills increasingly necessary among healthcare professionals. The report aims to map the current state of digitalization in the German healthcare system and identify the opportunities and risks associated with this process.

The report highlights the need for digital training measures in the health sector, as digital skills are often inadequate, both among health assistants and qualified nursing staff. Language barriers and the educational background of health assistants with a migrant background pose additional challenges.

The literature review identified nine relevant studies dealing with digitalization in the German healthcare system. The results show a significant lack of scientific investigations on this topic, highlighting a heterogeneous digitalization situation in Germany.

It was found that training programmes for healthcare assistants are highly variable, making it difficult to achieve qualitative uniformity in educational content.

The objectives of the digitalization of German healthcare system are as follows:

- Mapping digitalization in the industry
- Systematic review of the literature
- Identify opportunities and risks
- Qualitative interviews with stakeholders

Some of the main objectives include the assessment of the digital skills needed for health assistants and vocational training.



The paper discusses the challenges of digitalization in the German healthcare system, including telematics infrastructure and interoperability. It is crucial to increase the skills of staff through training and continuing education to ensure their professional capacity in the long term.

## THE DIGITALIZATION OF GREEK HEALTHCARE SYSTEM

The document is a national report on the emerging digital skills of the healthcare workforce in Greece, published by FRODIZO in April 2025. The report examines the current state of digital health in Greece, with a focus on the use of information and communication technologies (ICT) to support health and related fields.

Currently, the state of digitalization of the Greek health system is characterized by the following aspects:

- **Telemedicine:** Since 2016, the National Telemedicine Network (EDIT) has been operating in the Aegean islands, with telemedicine stations for patients and consultants. Over 10,000 telehealth appointments were made in 10 different specialties.
- **Digital health tools:** The use of health apps and digital therapeutics is limited due to regulatory gaps. However, there is an active innovation ecosystem with 113 registered startups.
- **Digital health data:** A large health data collection ecosystem has been formed, with 38% of the population having online access to their personal health data.
- **Smart hospitals:** Currently, there are no fully smart hospitals in Greece, but there are plans to turn some hospitals into smart and green facilities.

The challenges and obstacles to digital transformation in healthcare in Greece are as follows:

- **Gaps in digital health:** Despite progress, digital solutions are still not integrated into the Greek healthcare system. Telemedicine is an exception, the adoption of which has accelerated during the COVID-19 pandemic.
- **Data privacy and security:** Protecting health data is a priority, with compliance with GDPR and other European regulations.
- **Interoperability:** The National eHealth Interoperability Framework (NeHIF) is designed to improve the management of health data and e-services.

The path towards the digitalisation of Greek healthcare must take into account the **following prospective context:**

- **Current use of digital tools:** Caregivers use electronic health records, telemedicine, and digital measurement tools.
- **Challenges and obstacles:** Lack of specific training and proper equipment are significant obstacles.



- **Benefits of digital skills:** Digital skills improve the quality of care, allowing for more personalized and timely interventions.
- **Ethical and security aspects:** Data protection and privacy are paramount, with the need for informed consent and respect for the dignity of patients.

## THE DIGITALIZATION OF ITALIAN HEALTHCARE SYSTEM

The document analyses the current state of digital transformation in the Italian national health system and measures its impact. It was published by Global MedCare in May 2025.

The digitalisation of healthcare is a revolution that is profoundly transforming the way healthcare services are delivered and accessible. In Italy, the integration of digital technologies in healthcare is opening up new avenues to improve the quality of care and increase the efficiency of the healthcare system.

Italy has one of the oldest populations in the world, with 24.3% of the population aged 65 and older in 2024 <sup>1</sup>. This ageing population increases the demand for care, but current spending on digital health still has ample room for growth. The pandemic has put the Italian healthcare system to the test, highlighting its fragilities, including socioeconomic and demographic disparities in access to services, long waiting times and few digital resources and skills.

Since 2020, spending on digital health in Italy has increased significantly, reaching €2.2 billion in 2023, an increase of 22% compared to 2022. The most popular areas of investment are the electronic health record, integration systems, cybersecurity and privacy regulatory adjustments.

**The National Recovery and Resilience Plan (NRRP) includes a specific mission, Mission 6 “Health”,** which aims to make Italian health facilities more modern, digital and inclusive. The main objectives are the strengthening of the Electronic Health Record (EHR) and the promotion and financing of new telemedicine projects.

**Telemedicine allows healthcare professionals to provide better care even remotely,** thanks to securely accessible data. The NRRP envisages telemedicine assisting more than 200,000 patients by 2025.

**Connected Care represents the ecosystem that allows the patient to access health information** through integrated or interoperable digital platforms and to share this information with all the actors involved in the care process. Key areas of innovation include the Electronic Health Record, Digital Therapeutics and Artificial Intelligence systems.

**The main challenges to digitization in the Italian healthcare system are cultural, infrastructural and regulatory in nature.** The lack of digital skills among health professionals, the territorial fragmentation of information systems and the absence of a national strategy to support digital health are significant obstacles.



Regarding **Privacy and Data Security**, The decree of 31 December 2024 established the Health Data Ecosystem (EDS), which contains citizens' health data and ensures more effective and respectful management of the country's health reality

## THE DIGITALIZATION OF LITHUANIAN HEALTHCARE SYSTEM

The document is a detailed report on the state of digital skills of health workers in Lithuania, funded by the Erasmus+ programme of the European Union.

The current digitalisation of the Lithuanian healthcare system is characterised by the following aspects:

- **Digital Health Infrastructure and Initiatives:** Existing digital infrastructures and ongoing initiatives denote that Lithuania's digitalization journey is still in its infancy.
- **Privacy and Data Security:** Analyze data protection measures and security challenges with a very strict legal protection system.

In Lithuania, there are several Challenges and Obstacles to the Digital Transformation of Lithuanian Healthcare. The Lithuanian health system faces various challenges, along a path that is not without obstacles:

- **Digital Skills Gaps:** There are several gaps in digital skills among healthcare professionals.
- **Interoperability:** Following the interviews carried out, it is evident that there is still an unfinished path towards both the integration of digital systems and the implementation of the European Health Data Space (EHDS).

## THE RESULTS OF THE INTERVIEWS CARRIED OUT IN AUSTRIA, GERMANY, GREECE ITALY AND LITHUANIA

According to the topics on the interviews, the results are as following:

### OPPORTUNITIES

Insights from interviews revealed several ways in which digital technologies are positively impacting nursing care.

#### Germany

- organizational/corporate communication. Digital tools have made it easier to connect across different locations, significantly cutting down on the need for travel, particularly for those in managerial roles. As a result, both time and costs are saved. Tools like video



conferencing support regular communication between institutions, even across the country. Another major improvement is the digital sharing of important care-related information, which helps streamline and improve care processes and structures.

- documentation processes. Facilities are using software and AI-powered voice systems to reduce the time spent on documentation tasks—particularly benefiting nursing assistants who may face language barriers, such as those with migration backgrounds. With voice-based technologies, spoken interactions with residents can be directly recorded into care documentation. Additionally, the use of mobile devices improves documentation quality by enabling quick and secure data capture. These advancements increase efficiency and ensure more accurate and reliable records.
- support for physical activities. Supportive devices like exoskeletons help lessen the physical strain on care workers. By doing so, they help prevent injuries related to musculoskeletal stress and boost overall job satisfaction.
- quality of care: Digital tools have the power to facilitate communication between the different professionals involved in the care system, who can share information and intervene promptly if necessary. Patient monitoring systems, especially in home care, are essential to detect emergencies and thus enable immediate intervention.
- flow of information between relatives and residents: telemedicine allows family members to take part in medical decisions and helps reduce the time care staff spend sharing updates and information. Online platforms and video calls also make it easier for relatives to stay in touch regularly, helping to build stronger, more meaningful relationships with the residents.

## Greece

- Electronic health records are the key benefit. It improves the efficiency of service delivery and facilitates fast access to medical data. In this way, it promotes error-free working practices.
- Applications to improve communication and collaboration between healthcare professionals are a very important tool because it ensures transparency and the correct flow of information between professionals and enables a quick response to emergencies. A good collaboration among healthcare professionals ensures a more efficient plan of therapy.
- Empowerment of preventive care. The use of digital devices facilitate the early detection of health problems and promote an easier and quicker access to medical services. This benefit is very important for vulnerable groups.
- Relief in the workload: for home care workers and nurses, digitization is a way to ease the workload because many tools can simplify operational processes, reduce intervention time for each patient and facilitate decision making processes.



## Italy

- A better organization of work processes: Digital tools enable a more precise and faster way of working, whereby valuable time can be saved, particularly in routine tasks.
- Improvement of communication between healthcare professions: apps and digital tools to share patients' data can facilitate collaboration among different health professionals, which contributes to reducing potential sources of error.
- a better quality of care: digital documentation enables seamless and traceable recording of data, which leads to a faster response and greater safety for patients and staff, especially in home care.
- a stronger legal protection for health care workers: digital traceability of performed activities increases legal protection in cases of ambiguities or disputes.
- smart home technologies: the use of digital home applications contributes to greater patient safety, especially for dependent persons. Their use has a twofold positive function: it makes dependent persons a little more autonomous and eases the burden on caregivers.
- a more efficient use of resources and better regional care planning. The digitisation of health services allows an optimisation of the use of economic resources and thus contributes to a more efficient health system and to avoiding waste.

## Lithuania

- a better care quality: one of the key advantages is greater efficiency and enhanced quality of care. Digital technologies help streamline daily operations, minimize errors, and assist care staff in carrying out their responsibilities. Electronic documentation, in particular, allows for quicker and more precise communication between different healthcare professionals, leading to faster decisions and better coordination across care teams.
- a better care safety: digital technologies help safeguard both patients and healthcare workers. Features like location tracking during home visits offer added security for staff, while early warning systems allow for quick responses during emergency situations.
- support for physical activities. Support for lifting and moving patients alleviate operators' physical fatigue.
- Improved communication among professionals and between professionals and caregivers. Digital platforms (email, WhatsApp or video conferences) allow a faster and more efficient exchange of information both within care teams and with patients and their relatives. This contributes to the transparency of the whole decision-making and care processes.

## Austria

- optimization of documentation processes: the use of digital devices contributes to a higher care quality. For example, an electronic health record improves clarity, adherence to guidelines, and patient safety. Electronic health record, furthermore, reduces manual work.



- the standardization of processes enables better comparability, identification of training needs, and more targeted resource allocation.
- Data Space as a method of exchanging data securely and efficiently: data remains stored at the source and is only shared upon request, which increases efficiency and safety in the healthcare system and strengthens patients' control over their health data.
- Empowerment of vulnerable patients, especially those living people in rural areas or with restricted mobility: digital tools contribute to equality in the healthcare system as by telemedicine and telemonitoring also vulnerable patients can easily and regularly access to medical care.
- important contribution to prevention and patient safety: thanks to digital warning systems, in case of emergencies, especially of patients treated at home, digital devices allow targeted and timely interventions in case of sudden anomalies.

### **General remarks**

Digitalization in healthcare is an essential component for the evolution of the healthcare systems of all the countries joining the project. Indeed, they are all investing significantly in the digitalization processes because of the many undoubted benefits at all levels: they guarantee greater efficiency in the delivery of services, contribute to the optimisation of resources and performance times, make the intervention of operators more incisive and effective, and help to alleviate the workload, ensuring greater patient safety and timeliness in the management of emergencies.

### **Opportunities of digital competencies**

#### **Personalised and preventive Care**

The use of digital tools enables greater personalisation of care. Thanks to wearable devices, digital applications and information management systems, doctors can constantly monitor patients, offering tailor-made treatments based on real, up-to-date data. These devices can also strengthen prevention, because they enable the early detection of possible risk factors. In this way, digitisation processes contribute to combating inequalities in access to healthcare and also empower the most vulnerable citizens who have more difficulties in accessing the healthcare system.

#### **Immediate Access to Health Services**

Digitisation facilitates immediate access to health services, reducing waiting times and improving communication between patients and health professionals. Telemedicine, online consultations and electronic medical records allow citizens to receive care without the need to travel, which is crucial for isolated and rural communities.



## **Interprofessional Communication and Coordination**

Digital tools like video calls, email, and specialized platforms have made it much easier for professionals from different disciplines to communicate. This helps reduce the need for travel and ensures everyone stays well-informed. In urgent situations, these communication channels enable fast responses and better coordination among nurses, doctors, and other healthcare staff. Telemedicine also plays a key role by involving patients and their families in the care process, giving them access to medical information and decisions. Overall, these technologies make teamwork more streamlined and transparent.

## **Safety and Prevention**

Digital technologies play a key role in improving patient safety. Tools like early warning systems and radar-guided robots help detect emergencies more quickly and ensure timely responses. Features such as location tracking during home care visits and automatic reminders add another layer of security for both patients and caregivers. Additionally, supportive equipment like exoskeletons or lifting devices ease the physical burden on care workers, helping to prevent work-related injuries. These improvements can boost job satisfaction and encourage professionals to stay longer in the field, which may help address the shortage of qualified staff.

## **Efficiency and Savings**

Investing in technology and digital infrastructure leads to significant efficiency gains and cost savings. Electronic data management, reduction of medical errors and optimisation of resources improve the quality of care and decrease the overall costs of the healthcare system.

## **Policy Decision Support**

The use of digital data enables better policy decisions, ensuring that measures taken are based on accurate and up-to-date information. This support is vital for the development of effective health policies and the management of health emergencies.

## **BARRIERS OF DIGITAL TECHNOLOGIES**

This section highlights the administrative, technological, organizational/institutional, and policy-related barriers that hinder the full realization of benefits from digital health technologies for physicians.

### **Germany**



- age-related access to digital technologies: older generations often face challenges in shifting from traditional analog methods to digital workflows. This gap is partly due to differing experiences with technology—while younger staff have grown up with digital tools and navigate them naturally, older employees often need more structured support and training. These differences are also noticeable within teams: younger workers tend to see digital transitions as improvements, whereas older colleagues may view them with hesitation. Their concerns often stem from fears of making mistakes that could result in data loss or system crashes. As a result, some still prefer using paper-based documentation, believing it to be more reliable in the face of potential technical failures.
- fear of contact with digital applications: some workers feel incompetent and/or sceptical towards the use of digital devices.
- educational background of some nursing assistants, especially the ones with a migration background. The digital competencies of this target group are considered limited, which is attributed, among other things, to inadequate school education or a lack of prior digital experience. Educators report that many trainees must first acquire basic social and cognitive skills during their training before they can be confronted with digital topics. Even trained nurses often report having only fundamental digital skills. Many express a strong interest in further education to strengthen their ability to work with digital technologies, since their current knowledge is often limited to everyday, non-professional use.
- Digital tools and processes are seen as quicker and packed with more information, but they can also overwhelm employees. Getting constant notifications and having to keep up with digital paperwork can be stressful. Some people feel that digitalization speeds up the pace of work, which makes their workload heavier and more demanding.
- Many funding programs help pay for the initial purchase of hardware and software, but they don't usually cover ongoing expenses like maintenance, staff training, or guidance during the digital transformation. However, these ongoing costs are really important to make sure digital tools work well and stay successful over time.
- Data protection is another obstacle. Data protection procedures are laborious and often cumbersome and are perceived by operators as an additional workload.
- The training of operators is another serious problem because it is not homogenous throughout the country. The curricula of training courses, among other things, do not always include specific training units on digital skills. Teachers do not always have access to digitised documents.

## Greece

- First of all, in Greece there is a lack of modern equipment. The lack of digital devices makes access to digital transformation difficult. To this we must add that wi-fi coverage is not widespread and sometimes there is no compatibility between programmes and devices in use



- The absence of training and the difficulty to intercept specific training courses on the use of digital devices in the social and health area is a major obstacle.
- All these difficulties foster a certain scepticism among operators, who are not always able to grasp the opportunities offered by digital transformation.
- Digital tools are fast and full of information but can overwhelm employees.
- Constant notifications and digital paperwork increase stress at work.
- Some people believe digitalization speeds up the work environment, creating more pressure.
- Many funding programs only cover initial costs (hardware and software).
- They don't usually fund long-term needs like maintenance, staff training, or transformation support.
- Ongoing costs are essential for the long-term success of digital tools and processes.

### **Italy**

- The situation regarding digital skills is deeply critical. There is a clear deficit in the training and qualification of the staff.
- Poor economic resources and low awareness of the potential of digital health among both health professionals and citizens/patients are also obstacles to digitisation.
- Despite an increase in spending by the authorities, there is still a significant shortage of digital equipment.
- To this must be added the lack of wi-fi coverage, especially in the country's interior areas and mountain communities.
- Demographic developments further aggravate the situation: the working-age population is shrinking, while the need for health and care services is increasing due to the aging society. At the same time, there is a lack of sufficient funding. Especially in regions subject to austerity measures, such as under the re-entry plan, often only the basic services of healthcare can be covered.

### **Lithuania**

- The lack of technical equipment and comprehensive digital infrastructure, and the absence of suitable devices that are often missing.
- The lack of time is a major challenge for care workers, making it harder to use digital tools.
- Entering data takes a lot of time, especially when the equipment is outdated or not user-friendly. Also, many care centers don't have clear rules about how devices should be used, who's responsible for them, or who should handle documentation tasks.
- A major issue is the lack of proper training. Many staff members say they've had little or no instruction on how to use digital tools. They often have to figure things out on their own. Even when new programs are introduced, there's not enough support to help people use them effectively, so these tools don't become a regular part of everyday work.



- Many employees—especially older staff or those with fewer qualifications—struggle with digital technologies. The systems they’re asked to use are often confusing and complicated. Since they don’t have much IT experience and often feel unmotivated, they tend to avoid using digital tools.
- The lack or difficulty of interoperability between the various systems makes the homogeneous use of computer programmes difficult.
- Moreover, data protection requires additional skills and compilation time, which turns digital into an excessive and perceived unnecessary workload.

## **Austria**

- The Austrian healthcare system faces many difficulties in going digital, including technical, organizational, and cultural problems. A key issue is that many workers don’t have enough digital skills. For example, nurses often struggle with basic computer use. This isn’t just a problem for older staff—some younger employees also lack basic knowledge, like how to use Microsoft Word or Windows, even though these skills are often taken for granted.
- Access to digital technologies in healthcare often depends on the specific job role—for instance, doctors may use tools that nurses cannot. Some technologies require special training, which delays their rollout and limits who can use them. This uneven access to digital tools increases division and strengthens existing workplace hierarchies.
- There is also a high degree of technological fragmentation in Austria, which makes interoperability difficult. This creates disruptions and is often time-consuming and stressful for operators.
- Heavy documentation workload is a major challenge, whether done on paper or digitally—it’s seen as slow and confusing.
- Employees often lack clarity on data protection rules and how they apply in daily work, even though laws like the GDPR exist. As a result, data protection feels like a burden rather than something helpful.
- Poor involvement and weak communication create mistrust toward digital solutions. Nurses and health workers often see digital tools as an extra burden, not a real help.
- This isn’t just about lack of training- they’re rarely included in designing or introducing these systems. Technologies are often imposed from the top down, without considering the users’ practical needs or views.

## **CONCLUSIONS**

Digital transformation means using digital technologies like computers, the internet, communication tools, digital devices and home automation and to make big improvements in how an organization works. It involves changing key aspects of the organization to make it more effective, connected, and efficient.



Digital health has grown rapidly in recent years. It's now widely understood that it plays a key role in helping everyone access healthcare and in making health services more efficient, easier to reach, and more effective. Digital health affects many aspects of health system, such as the acquisition of digital devices, the design of digital growth strategies, the change of internal organizational structure, the training of health workers and professionals and the definition of proper goals. A recent systematic literature review about DT in HC ([Marques & Ferreira, 2020](#)) shows how much research on this topic has increased over the last 20 years and more after the Pandemic and highlights the most common technology-related research themes within this domain.

Digital technologies are expected across Europe to help improve both the quality of care and how smoothly healthcare systems work. They do this by making it easier and more accurate to carry out key tasks like evaluating patients, sharing information, analyzing data, and delivering precise treatments. Using new technologies like wearable devices and health apps has mainly improved how things work inside the healthcare system and changed the way patients are involved. Thanks to advancements in big data and data analysis, these tools are now helping create more personalized care tailored to individual needs.

However, educational institutions do not provide a specific education in digital health for students. The present research assessed whether health workers are taught how digital health can be used to increase quality of care, support their work functions and provide assistance to patients. It is reported that technical educational institutions do not provide students with certified education in digital health. This is the main barrier to access to digital transformation.

Across Europe, the digital transformation of healthcare is seen as both a necessary and promising step forward, but it faces consistent obstacles in practice. Austria is striving to integrate digital tools into daily healthcare routines, yet fragmentation and uneven digital skills remain key challenges. Germany places strong emphasis on continuous digital training and user-friendly systems, recognizing the need to involve healthcare professionals directly in technology design and development. Greece highlights the critical role digital health could play—especially in remote and island communities—but struggles with limited infrastructure, training, and user acceptance. Italy sees major potential in strengthening local and home healthcare through digital tools, though a significant barrier remains in retraining health workers, particularly those involved in home care. Lithuania, while showing progress, still confronts digital skill gaps and system incompatibility, calling for better integration and stronger data protection.

Overall, all five countries acknowledge the need for better education, simpler systems, structural support, and inclusive implementation to fully unlock the benefits of digitalisation in health services.

Digital health has the potential to greatly improve patient care, but only if healthcare workers know how to use it properly. That's why it's so important to invest in training and ongoing learning to build their skills and confidence with new technologies.



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