



How Digital Services are changing the work dynamics in Community Health Centers or the Health Sector: A Comprehensive Review for Future Research Agenda

Andrias Andrias^{1,*}, Setyo Riyanto², Dewi Nusraningrum³, M. Ali Iqbal⁴

^{1,2,3,4} Faculty of Economics and Business, Mercu Buana University, Jakarta, Indonesia

* Email: andrias.lighter@gmail.com

Abstract: Digital transformation in the healthcare sector has triggered a "virtual service revolution" that fundamentally changes the paradigm of medical service delivery. The purpose of this study is to synthesize the literature on how digital services change work dynamics in Community Health Centers or the healthcare sector through the Systematic Literature Review (SLR) method. The research findings show changes in work dynamics in four main dimensions, namely Managerial Redefinition where Managers now bear strategic responsibility in guiding digital transformation, which requires informatics competencies and digital leadership. Task-shifting where the use of algorithms and telemedicine allows nurses to handle up to 69.8% of initial consultations independently, thereby drastically reducing the workload of doctors. Staff Wellbeing where effective information systems strengthen work - life balance by reducing administrative burdens, although the challenge of "techno-stress" remains. Patient Interaction where healthcare staff now act as technology educators for patients with low digital literacy to maintain service equity. The conclusion is that digital services create a more efficient and distributed work model. Its success depends on organizational coordination as a "lubricant" for technology integration and on increasing staff digital self-efficacy.

Keywords: Digital Services; Work Dynamics; Community Health Centers; Digital Transformation of Health; Task-shifting; Digital Literacy

Introduction

The so-called virtual care revolution or digital transformation in the healthcare sector has become one of the major pillars of the functioning of modern society (Obeid et al., 2023). Digital healthcare involves the application of new high-tech technologies like mobile devices, wearable sensors, and cloud computing to enhance healthcare delivery and management. The COVID-19 pandemic has served as a worldwide booster to the use of this digital transformation across different sectors, including the healthcare sector, to guarantee continuity of services despite the physical constraints (Omar et al., 2025).

In the primary healthcare setting, like in community health centers (Puskesmas), digital services no longer constitute some form of supporting infrastructure but are now strategic assets that change dynamics of operation (Natakusumah et al., 2022). This change is noticeably clear in the field of management; health managers, who used to emphasize more on traditional clinical services, now have the responsibility to design, implement and guide

the digital healthcare services. This digitization has facilitated Task-shifting, meaning that a non-physician employee or triage nurse can assume a more significant role in the first consultations with the help of algorithms, which will simply decrease the number of patients that a general practitioner has (Rubuga et al., 2026).

Yet, this work dynamic change offers new problems to the frontline healthcare workers. Digital self-efficacy, i.e. the confidence in using technology to handle patient data and to coordinate among units, is now demanded in nurses and other medical staff (Putri et al., 2026). Although the successful implementation of hospital information systems (HIS) can enhance the work-life balance by lessening the administrative overhead, the technology can also lead to so-called techno-stress and ambiguity between working time and personal life. Moreover, interaction between service providers and patients is critical to the success of digital services. The emergence of patient-centered care models requires healthcare staff to be not only technically proficient but also able to

educate patients with low levels of digital literacy to prevent inequities in access to services. Technology cannot be a value-in-use without effective integration since it will continue to be an extra cost burden with no real value-in-use (Tiitola et al., 2023).

Even though the possible advantages of digitalization have been extensively debated, the literature synthesizing the impact of this technology on the dynamics of internal work and the relationships between professionals in the healthcare sector is limited (Tiitola et al., 2023). Thus, the present Systematic Literature Review (SLR) is essential in order to comprehend how work dynamics alter due to the digital services and which aspects contribute to their success in the Community Health Center (Puskesmas) setting and the healthcare industry in general. It is hoped through this review that more effective measures may be developed to be applied to healthcare organizations in adopting technology in a way that does not harm the well-being of the workforce and the quality of patient care (Zhao, 2026).

Literature Review

Digital services have forced a redefinition of managerial roles in the primary healthcare sector. While health managers' primary role was to manage clinical services, they are now increasingly responsible for the design, implementation, and guidance of digital healthcare services. Management competencies now include informatics skills, visionary thinking, and the ability to support employees in adopting technology (Ylitalo & Laukka, 2023). Research shows that the need for these competencies varies across management levels: frontline managers *focus* more on day-to-day management, digital communication with staff, and marketing digitalization to employees. Middle managers emphasize activity coordination and innovative thinking. Senior managers are responsible for strategic investments in digital solutions and the management of larger organizational entities (Ylitalo & Laukka, 2023).

One of the most significant changes in work dynamics is the Task-shifting enabled by

digital platforms. National telemedicine implementation, as seen in the case of Babyl in Rwanda, showed that triage nurses were able to manage up to 44.2% of initial consultations independently using standard protocols (Rubuga et al., 2026). This dynamic provides a dual benefit: **Reduced Physician Workload:** With the support of algorithms and nurse-based triage, the workload of general practitioners is significantly reduced, allowing them to focus on more complex cases. **Decompression of the Health System:** Digital services have been shown to reduce physical visits to health facilities for primary conditions such as respiratory infections or malaria, which in turn reduces overcrowding in community health centers (Puskesmas) or hospitals (Rubuga et al., 2026).

The internal work dynamics of healthcare staff are strongly influenced by their level of digital self - *efficacy*, which is an individual's confidence in using technology to complete tasks (Putri et al., 2026). High-digital self-efficacy nurses have been discovered to be in a better position to adjust to information systems, attain higher work efficiency, and lessen patient care mistakes. In addition, the moderate use of Hospital Information Systems (HIS) is a moderating variable that enhances the correlation between work-life balance and performance of healthcare workers. A good HIS can accelerate documentation and minimize administration, thereby giving staff members more time to rest and recover and therefore, enhances productivity and organizational commitment. Nevertheless, when the system is excessively complicated, then there is a threat of the emergence of techno-stress, which will upset this balance (Putri et al., 2026).

The digital services are changing the way healthcare staff and patients interact, as the former now are digital teachers as well. The success of healthcare technology relies heavily on users' digital health literacy, which is the patient's ability to search for, understand, and evaluate online health information (Bywall et al., 2025). There are serious concerns about the digital divide: Lower Economic Groups

(B40): They tend to have more problems because of complicated medical terminology and inadequate digital infrastructure, which means that they are more likely to need direct assistance of clinical personnel. Elderly Groups: The least digitally literate and tend to stop using services when they are faced with technical challenges. The dynamic necessitates Community Health Center employees to offer helplines or extra training to the elderly patients so that they may not feel isolated by the services. The intention to use remote services also depends on the sociodemographic factors, i.e., gender and the level of education, where women and highly educated people were more likely to be prepared to use this technology (Kim & Park, 2025).

Conceptually, changing work dynamics in the healthcare sector is not just about adopting tools, but about creating value *in-use*. Value is not intrinsically inherent in technology; rather, it emerges from the actions of healthcare practitioners who transform their work practices with the support of that technology (Tiitola et al., 2023). For digital services to truly positively transform work dynamics, healthcare organizations must actively redesign their service activities and not simply "glue" technology onto legacy processes. This requires the integration of facts (environmental conditions), possibilities (technological potential), and values (care goals) through effective communication between technology providers and healthcare staff (Tiitola et al., 2023). The literature shows that digital services are shifting work dynamics from conventional models to more distributed (*task-shifting*), data-driven (*knowledge management*), and demanding new competencies from both managers and field staff (Ylitalo & Laukka, 2023). The main challenges remain in mitigating the digital divide for vulnerable groups and ensuring the psychosocial well-being of healthcare workers amidst this transformation (Obeid et al., 2023).

Methods

The research methodology used was a literature review involving a review of literature on Digital Services, particularly in the health sector, a systematic literature review, and a future research agenda. The literature search

included academic journals from the Scopus database. A keyword search was conducted using terms such as "Digital Services in the Health Sector," yielding 194 relevant and up-to-date documents, articles, publications, and reports. The year range for the literature review was from 2021 to 2026 to ensure up-to-date information. After filtering accessible articles and only selecting article documents obtained 74 documents. Based on the analysis of 74 literature sources, there are 11 primary sources that are specifically relevant in the world or context of Health to be reviewed.

Table 1. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Type	Indexed journal	Non-Indexed Journal
Title	Digital Services	No Mentioned
Language	English	Non-English
Timeline	Between 2021-2026	Less than 2021
Topic	Digital Services on healthcare	Other Topics
Participant	Health workers	Non-Healthcare Workers

A structured data extraction process based on the PRISMA guidelines was developed to extract relevant data from the selected articles. The extracted data included details about the study characteristics (such as authors, year of publication, and methodology). This data extraction process also involved assessing the quality and relevance of the selected articles to ensure the validity and reliability of the findings through a systematic approach. This data extraction process was conducted by the researchers to increase the reliability and consistency of the results. The authors performed the initial extraction, reviewed, and verified the extracted data to ensure accuracy. The authors were responsible for conducting statistical analyses of the extracted data to identify digital services, particularly in the health sector. The authors are responsible for synthesizing the findings and drawing conclusions based on the analysis.

Results and Discussions

Analysis of the reviewed literature indicates that digital services have fundamentally changed the dynamics of work

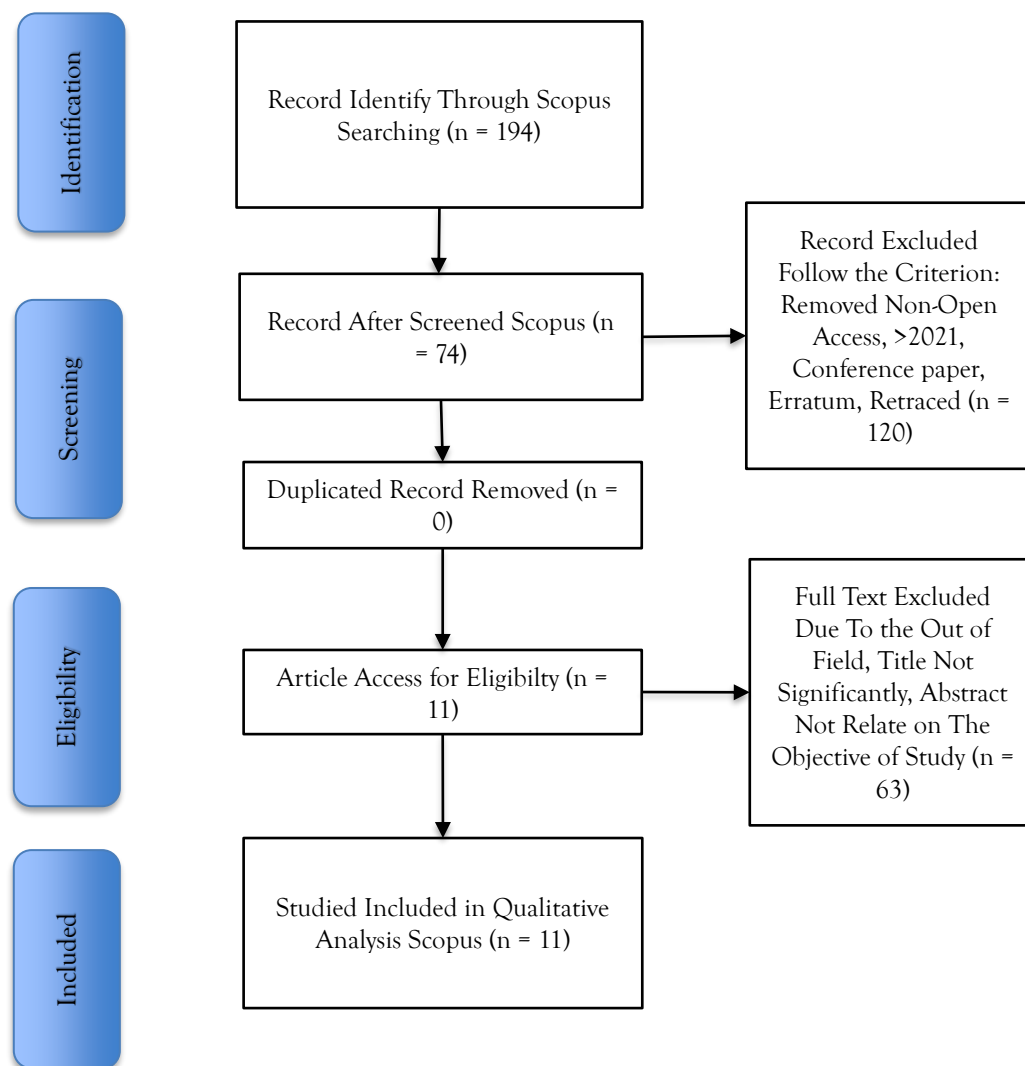


Figure 2. PRISMA Flow Diagram Identification and Selected Studies

in the healthcare sector through several key mechanisms. These findings are grouped into themes that include competency changes, operational efficiency, workforce well-being, and shifting patterns of patient interaction. Digitalization has drastically changed the role of managers at the primary healthcare level. Health managers, who traditionally focused on clinical care management, now hold strategic responsibility for the design, implementation, and guidance of digital healthcare services. Key findings indicate a need for a new competency known as digital leadership, which encompasses informatics skills and the ability to manage large-scale organizational change (Ylitalo & Laukka, 2023). These dynamics vary

by management level: Frontline Managers: Focus more on day-to-day management, digital communication with staff, and "marketing" digital solutions to employees to encourage their adoption. Middle Managers: Coordinate cross-unit activities and encourage innovative thinking. Senior Managers: Focus on strategic investments in digital solutions and the broader management of the organizational entity. The unpreparedness of managers in mastering IT skills was found to cause a sense of uncertainty and worry in leading work units (Ylitalo & Laukka, 2023).

Table 2. Research References

Title Author & Year	Journal / Conference	Related Variables	Research purposes	Method	Instrument	Participant	Key Findings	Measurable Results	Region
Zhao (2026)	BioMed Central Ltd	Efficiency, Collaboration, Digital support for the elderly	Evaluating digital health services in elderly-friendly community initiatives.	Realist evaluation	In-depth interviews with key informants.	District officers, community staff, and seniors.	Inter-sector collaboration is a key mechanism; mobile phone training is essential for older adults	CMOCs (Context-Mechanism-Outcome Configurations).	China
Chrysikou et al. (2023)	Frontiers in Medical Technology	Well-being, Job satisfaction, Digital workload	Analyzing the impact of digital tools on the well-being of non-clinical hospital professionals.	Literature review and semi-structured interviews	Interview guide on workload changes	12 NHS health architects.	Digitalization blurs work-life boundaries but increases location flexibility.	16.6% of respondents provided a balanced positive-negative impact analysis.	English
Tiitola et al. (2023)	Journal of Management and Governance	Value-in-use (VIU), Service logic, Innovation.	Exploring how care providers create value from digital technologies.	Interventionist case study	Participant observation and technician interviews.	Laboratory technicians and nurses.	Value emerges when staff transform their legacy working practices into digital models.	Real-time redesign of medical laboratory processes.	Nordic countries
Obeid et al. (2023)	Journal of Multidisciplinary Healthcare	Ethnicity, DHS Use, Trust	Analyzing the differences in digital service usage between ethnic minorities and majorities.	Quantitative online survey	Hierarchical regression questionnaire.	606 respondents from various ethnic groups.	Ethnic disparities are influenced by language and trust in digital health systems.	The beta coefficient is significant ($P < 0.05$) on the ethnicity variable.	Israel
Wang et al. (2026)	Nature Scientific Reports	Infrastructure, Organization, Policy	Investigating successful pathways to district-level digital medical provision.	Fuzzy-set QCA (fsQCA)	Case data from official websites and news.	30 digitally empowered districts.	Departmental coordination acts as a lubricant to integrate digital tools into the workflow.	Identify 4 main paths: balanced technology, org-env, etc.	China
Putri et al. (2026)	ITEGAM-JETIA	Digital self-efficacy, Work-life balance, Performance	Analyzing the influence of HIS on nurse performance with work balance as a factor.	Quantitative (SEM-PLS)	Online questionnaire via Google Forms.	190 Nurses and Midwives.	Utilizing digital systems reduces administrative burdens and speeds up care documentation.	The R-square value of nurse performance reached 0.982.	Indonesia
2015 to 2024 Rubuga et al. (2026)	BMC Primary Care	Task-shifting, Consultation, Protocol compliance	Measuring the impact of national telemedicine on physical visits to clinics.	Interrupted Time Series Analysis (ITS)	Babyl and HMIS database data.	3.9 million medical consultations.	Triage nurses were able to handle 44.2% of initial consultations independently using the assistance of digital algorithms.	15-22% reduction in physical visits for malaria and respiratory infections.	Rwanda
Aljafari et al. (2024)	Springer	Patient engagement, Satisfaction, Readmission rate	Assessing how the local environment influences the effectiveness of hospital digital services.	Secondary panel data analysis.	AHA, CMS, and Census databases.	Public hospitals in the Metropolitan Area (MSA).	Digital services reduce readmission rates, especially in areas with high computer literacy.	The beta coefficient of digital services on patient satisfaction is significant.	USA
Ylitalo & Laukka (2023)	Leadership in Health Services	Management competencies (evidence, resources, knowledge, leadership, communication, change)	Describes primary health managers' perceptions of the competencies required in digital services at various management levels.	Qualitative secondary analysis of previous interview data.	MCAP framework.	Frontline, middle and senior managers in 4 primary health centers.	Managers are now responsible for the design and implementation of digital services, not just clinical services. Guidance is needed for staff in adopting technology.	Identify different informatics and digital leadership competency needs at each management level.	Finland
Kim & Park (2025)	Korean Gerontological Nursing Society	Effort expectancy, Social influence, Intention to use	Determining the impact of performance expectations on the intention of the elderly to use digital services.	Quantitative cross-sectional.	Face-to-face questionnaire (30 minutes).	Elderly patients in general hospitals and auxiliary health centers	Family support and ease of system greatly influence the dynamics of elderly care.	The regression path coefficient is significant.	South Korea (Sejong City)

Source: Scopus Database, Processed (2026)

One of the most obvious impacts of digital services on work dynamics is *task-shifting*. Digital platforms such as telemedicine enable triage nurses to take over initial consultation tasks previously performed by general practitioners (Rubuga et al., 2026). Data demonstrates the significant efficiency of this mechanism: In Rwanda, telemedicine enabled nurses to manage up to 44.2% of initial consultations independently without the need for a referral to a doctor. This mechanism is estimated to free up approximately 8,750 doctor work hours each month. Digital services have also been shown to reduce the physical burden on health facilities by reducing physical visits by 15% to 22% for common diseases such as malaria and respiratory infections (Rubuga et al., 2026).

Digital transformation has a dual impact on the well-being of healthcare professionals. On the one hand, the effective use of Hospital Information Systems (HIS) acts as a moderating variable that strengthens the relationship between work *life balance* and healthcare worker performance (Putri et al., 2026). An efficient HIS helps reduce administrative burdens, speeds up documentation processes, and provides staff with more time for rest and recovery. On the other hand, there is a new psychosocial challenge, namely Technostress. The emergence of the need to always be "online" and multitask while working remotely can blur the boundaries between personal life and work. Digital Self-Efficacy: Nurses with high confidence in technology (*digital self-efficacy*) show better performance and are more able to adapt to system changes. Creative Workload: For non-clinical professionals (such as healthcare architects), digital tools increase work flexibility, but can also increase workload due to expectations to work faster during times of crisis (Chrysikou et al., 2023).

Digital services have shifted the care model from clinic *-centric* to patient *-centric*. Healthcare staff now have an additional role as digital literacy educators. The success of digital services is highly dependent on patients' digital health literacy, namely the ability of patients to search for and evaluate health information

independently. Findings indicate a digital divide that affects the dynamics of care, namely Vulnerable Groups (B40 & Elderly): Often face difficulties due to complex medical terms in applications, thus requiring additional support or training from Community Health Center staff to avoid isolation from services. Patient Engagement: Digital services that allow patients to independently upload vital signs data increase the frequency of monitoring without the need for physical visits, but require staff to have sharper data analysis skills (Aljafari et al., 2024). Digital services do not automatically improve performance unless accompanied by active redesign of work processes. Inter-departmental coordination acts as an "organizational lubricant" that facilitates the seamless integration of digital tools into cross-unit workflows. Without proper coordination, technology often becomes an additional cost without providing real value *-in-use* (Tiitola et al., 2023). Work dynamics in the healthcare sector have been transformed into a more distributed (through *task-shifting*), data-driven (through HIS and *big data*), and demand digital leadership competencies from primary care managers. Despite drastic increases in operational efficiency, organizations must remain vigilant against the risk of digital fatigue and inequitable access to care for groups with low digital literacy.

Discussions

Digital transformation, often referred to as the "virtual care revolution," has fundamentally changed the operational landscape in the primary healthcare sector, including community health centers (Puskesmas) (Obeid et al., 2023). This discussion synthesizes findings from various literatures to understand how work dynamics are changing from managerial to staff operations to patient interactions, as well as the accompanying structural challenges. Digital services have forced a redefinition of managerial roles. Health managers are no longer solely focused on traditional clinical service management but now assume strategic responsibility for designing, implementing, and guiding digital transformation (Ylitalo &

Laukka, 2023). Based on the MCAP framework, managers at all levels require strong informatics competencies to reduce uncertainty and anxiety in leading units. Work dynamics change specifically based on management level: Frontline Managers now have to act as "marketers" of technology to staff, motivating them to adopt new systems, and handling daily technical issues. Senior Managers are more focused on strategic investments and managing larger organizational entities within the digital ecosystem. Visionary leadership is key; Managers must be able to see technology not just as a tool, but as a strategic asset that changes the service process as a whole (Ylitalo & Laukka, 2023).

The mechanism of work dynamics change triggered by digital services in the healthcare sector is not a simple linear process, but rather the result of a complex interaction between technology, organizational readiness, and individual actors' intentions to change their work practices. Based on a literature synthesis, this change is triggered by four main interrelated mechanisms: Task-shifting, redefinition of managerial roles, synchronization of sectoral coordination, and realization of value -in-use through redesign of service processes. Resting on this analysis, the model of the mechanism of changes in work dynamics under the influence of digital services could be developed, i.e., input (Technical and Environmental Triggers), whereby: Technology Features are: Ease of Use (PEOU), Perceived Usefulness (PU), and System Reliability. Environmental Context- government policy support and service requests by patients. Mediator (Organizational & Individual Capacity) comprising of Digital Leadership wherein the role of the manager is to mentor employees and offer resources. The coordination of information and workflow across departments is known as Cross-Unit Coordination (Organizational Lubricant). Digital Self-Efficacy is the level of confidence of the staff in the use of the health information systems. The Dynamic Change Process (Core Mechanism) comprising of Workflow Redesign is Changing the way care is provided

not simply substituting manual tools. Task-shifting: This refers to assigning non-physician personnel routine tasks, with the assistance of algorithms. Patient Education in which the staff would be rearranged to become technology educators to patients with low literacy. The result (New Work Dynamics) in terms of Data-Based Efficiency is a decrease in administrative load and speeding up care documentation. Work-Life Balance is a well-performing HIS that enhances the work by the staff because of less administrative stress. Creation Value-in-Use Creation Value-in-Use Creation is the achievement of more efficient, resilient, and patient-centered care.

Digital technology has allowed a lot of task-shifting to be implemented. Decision-support algorithms and telemedicine platforms have facilitated the replacement of the initial consultation role played by physicians by triage nurses (Rubuga et al., 2026). In Rwanda, a case study demonstrated that up to 69.8% of the consultations may be done independently by nurses following standardized procedures, which significantly decreased the workload of the general practitioners (Rubuga et al., 2026). Moreover, the efficient utilization of Hospital Information Systems (HIS) has changed the manner of documenting care. HISs are also faster at recording data and causing less administrative overhead, as professionals can spend more time on direct patient care. Yet, such efficacy depends on the interdepartmental coordination as an organizational lubricant to effectively incorporate digital tools into cross-unit workflows (Wang et al., 2026).

Staff digital self-efficacy has an impact on internal work dynamics. Highly-technology-confident healthcare workers can more easily adjust to information systems, become more efficient, and minimize the possibility of service errors (Putri et al., 2026). Digital technology can have a dual effect on the well-being of staff: Positive Impact: Efficient systems enhance the connection between work-life balance and performance by offering them more sufficient rest time due to the automation of routine work. Adverse Effect:

Digitalization can cause the emergence of so-called techno-stress and the loss of demarcation between personal and working life because of the necessity to be always online and multitask when working remotely (Chrysikou et al., 2023).

E-services make community health center employees technology teachers. It is now believed that digital health literacy is a health super-determinant, as it defines whether patients have equal access to services or not (Obeid et al., 2023). The staff-patient relationships vary depending on socioeconomic backgrounds. Groups B40 and elderly: Are less digitally literate and tend to be lost in complicated medical jargon in apps. Health staff must provide additional support, training, or simplify language to prevent these groups from being isolated from services. Motivating Disadvantaged Groups: Paradoxically, individuals with low access to insurance in certain areas may have a higher incentive to use digital services to reduce the cost of physical visits, requiring staff to be more proactive in promoting self-monitoring tools (Aljafari et al., 2024).

A key lesson from this review is that technology does not intrinsically create value ; value *-in-use* emerges only when healthcare staff actively change their work practices to realize the technology's potential (Tiitola et al., 2023). If technology is simply "glued" onto legacy processes without redesigning activities, it will only become an additional cost burden. Therefore, the success of digital work dynamics requires integration between Facts: The conditions of available infrastructure and resources. Values: The goals of care and staff motivation to change. Communication: The ongoing interaction between technology developers, managers, and field staff (Tiitola et al., 2023).

Digital services have shifted the work dynamics in the healthcare sector from a conventional clinic-centric model to a more distributed, data-driven, and patient-centered one. While offering high efficiencies through *task-shifting* and HIS, healthcare organizations must be aware of the risk of digital burnout

among staff and unequal access to services for vulnerable groups. Long-term success depends on supportive digital leadership and staff willingness to continuously redesign work processes.

Conclusions and Suggestions

Based on a systematic review of the existing literature, it can be concluded that digital transformation in the healthcare sector, often referred to as the "virtual care revolution", is not simply the addition of technological infrastructure, but rather a paradigm shift that fundamentally changes the dynamics of work in Community Health Centers and the healthcare sector at large (Obeid et al., 2023). Summary of Key Findings: Digital transformation changes work dynamics through four main pathways: Evolution of Managerial Roles where health managers at the primary care level are now not only focused on traditional clinical management, but have transformed into digital leaders responsible for the design, implementation, and guidance of technology (Ylitalo & Laukka, 2023). Lack of informatics competency at the managerial level was found to be a source of uncertainty and a barrier to adopting innovation. Efficiency through Task-shifting: Digital services allow for significant task delegation, where triage nurses can manage up to 69.8% of initial consultations independently through the support of algorithms and standard protocols. This dynamic drastically reduces the workload of general practitioners and frees up thousands of hours for more complex cases (Rubuga et al., 2026). Moderated Workforce Well-Being: Effective use of Hospital Information Systems (HIS) has been shown to strengthen the relationship between work *-life balance* and staff performance by reducing administrative burdens and speeding up documentation processes. However, if not managed well, digitalization risks triggering "techno-stress" and blurring the boundaries between personal and work time. Digital Literacy as a "Super-determinant": The work success of healthcare staff now depends heavily on the digital health literacy levels of patients. Community Health Center staff now have an additional role as technology educators, especially for vulnerable

groups such as the elderly and low-income communities (B40) who face access barriers due to a lack of digital skills (Omar et al., 2025).

Practical and Policy Implications: To realize the value in-use of technology, healthcare organizations must not simply "glue" technology onto legacy processes (Tiitola et al., 2023). It requires an active redesign of work processes where healthcare staff have the motivation and intention to change their work practices. The government and Puskesmas managers are advised to: **Build Capacity:** Invest resources in ongoing digital skills training programs, not just one-off training, to improve staff digital self-efficacy. **Financial Sustainability,** namely ensuring the existence of sustainable financing models (such as public-private partnerships/PPPs) so that digital services do not stop when donor support ends, which can cause a sudden burden on physical systems (Rubuga et al., 2026). **Service Inclusivity,** namely Providing a simple interface, easy-to-understand language support, and direct staff assistance for patients with low digital motivation to maintain service equity (Omar et al., 2025). **Limitations and suggestions from researchers are future research** While digital services offer significant potential for decompressing healthcare systems, current literature suggests the risk of structural inequalities if local environmental factors (such as internet access and insurance) are not considered (Aljafari et al., 2024). Future research should further explore the long-term impact of artificial intelligence (AI) on healthcare professionals' professional autonomy and how to mitigate staff fears of being displaced by technology (Backes et al., 2025). Furthermore, longitudinal studies are needed to objectively measure the true impact of technology use on patient clinical outcomes, beyond simply user satisfaction perceptions (Aljafari et al., 2024). Digital transformation in community health centers (Puskesmas) is an inevitability that requires visionary leadership, strong inter-unit coordination, and a commitment to continuous digital education (Wang et al., 2026). By systematically integrating technology into workflows, the healthcare sector can achieve a more efficient,

resilient, and truly patient-centered service model.

References

- Aljafari, R., Soh, F., & Setia, P. (2024). The local environment matters: Evidence from digital healthcare services for patient engagement. *Journal of the Academy of Marketing Science*, 52 (5), 1343–1365. <https://doi.org/10.1007/s11747-023-00972-0>
- Backes, C., Godot, C., & Gujer, C.Y. (2025). Digital healthcare services in community pharmacies in Switzerland: Pharmacist and patient acceptability, and pharmacist readiness—the Pneumoscope™ pilot study. *Digital Health*, 11 . <https://doi.org/10.1177/20552076241313164>
- Bywall, K.S., Norgren, T., & Avagnina, B. (2025). Promoting digital health literacy among immigrants in Sweden: opportunities and challenges for healthcare services. *German Journal of Public Health* . <https://doi.org/10.1007/s10389-025-02496-z>
- Chrysikou, E., Papadonikolaki, E., & Savvopoulou, E. (2023). Digital technologies and healthcare architects' wellbeing in the National Health Service Estate of England during the pandemic. *Frontiers in Medical Technology*, 5 . <https://doi.org/10.3389/fmedt.2023.1212734>
- Kim, Y., & Park, M. (2025). Factors influencing elderly patients' intention to use digital healthcare services: A cross-sectional correlational study. *Journal of Korean Gerontological Nursing*, 27 (1), 10–20. <https://doi.org/10.17079/jkgn.2024.00542>
- Natakusumah, K., Maulina, E., & Muftiadi, A. (2022). Digital transformation of health quality services in the healthcare industry during disruption and society 5.0 era. *Frontiers in Public Health*, 10 . <https://doi.org/10.3389/fpubh.2022.97>

1486

- Obeid, S., Mashiach, M., & Gur, A. (2023). Examining Ethnic Disparities in Digital Healthcare Services Utilization: Insights from Israel. *Journal of Multidisciplinary Healthcare*, 16, 3533–3544. <https://doi.org/10.2147/JMDH.S429121>
- Omar, NN, Syarfina, A., & Bakar, A. (2025). A Comparison Study on User Acceptance of Digital Healthcare Services among M40 and B40 Communities in Selangor: A Study on SELangkah Application. *Journal of Advanced Research Design*, 129 (1), 75–88. <https://doi.org/10.37934/ard.129.1.7588>
- Putri, PA, Lauditta, AU, & Ugut, GSS (2026). Hospital Information System Utilization Moderates Digital Self-Efficacy, Personal-Job Fit, And Work-Life Balance On Healthcare Service Performance. *Journal of Engineering and Technology for Industrial Applications*, 12 (57), 1054–1062. <https://doi.org/10.5935/jetia.v12i57.3216>
- Rubuga, F.K., Absolomon, G., & Claudien, T. (2026). Telemedicine implementation and healthcare utilization in Rwanda: interrupted time series of baby digital health services from 2015 to 2024. *BMC Primary Care*, 27 (1). <https://doi.org/10.1186/s12875-026-03179-8>
- Tiitola, V., Marek, M., & Korhonen, T. (2023). Enabling value-in-use with digital healthcare technologies: combining service logic and pragmatic constructivism. *Journal of Management and Governance*, 27 (3), 841–871. <https://doi.org/10.1007/s10997-022-09631-y>
- Wang, Y., Ding, H., & Feng, Q. (2026). Exploring the pathways of digital technology driven healthcare service delivery in county-level regions. *Scientific Reports*, 16 (1). <https://doi.org/10.1038/s41598-025-33925-4>
- Ylitalo, A., & Laukka, E. (2023). Primary healthcare managers' perceptions of management competencies at different management levels in digital health services: secondary analysis. *Leadership in Health Services*, 36 (2), 247–260. <https://doi.org/10.1108/LHS-07-2022-0078>
- Zhao, Y. (2026). Digital healthcare services in the context of age-friendly community initiatives in China: a realistic evaluation. *BMC Health Services Research*, 26 (1). <https://doi.org/10.1186/s12913-025-13846-8>