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Digital Health Literacy and Tele-Nursing Adoption in Post-Pandemic Care

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Abstract

Purpose
This study critically examines the influence of digital health literacy on tele-nursing adoption in post-pandemic care systems. Although tele-nursing accelerated during COVID-19, its long-term integration remains uneven. The study investigates whether digital health literacy functions as a predictor, moderator, or barrier in the sustained uptake of tele-nursing technologies among nurses and patients.

Design/Methodology
A quantitative, cross-sectional design was applied, using a mathematically driven modeling approach. Digital health literacy, tele-nursing acceptance, perceived workload shift, and technological self-efficacy were operationalized using validated scales. Structural equation modeling (SEM) and regression diagnostics were applied to determine predictive strength, intervariable relationships, and moderating effects.

Findings
Preliminary results reveal a statistically significant association between digital health literacy and tele-nursing adoption. However, adoption is not purely literacy-dependent; moderating factors—workplace digital infrastructure, organisational readiness, perceived clinical usefulness, and algorithmic trust—shape outcomes. Nurses with high literacy still resist adoption when technological burdens or workflow disruptions increase. The findings question the assumption that improving literacy alone guarantees sustainable tele-nursing integration.

Originality/Value
This study advances post-pandemic discourse by reframing digital health literacy not as a standalone enabler of tele-nursing, but as part of a complex interactional ecosystem involving institutional, cognitive, and infrastructural determinants. The work exposes gaps in current digital-health policies that privilege training while overlooking structural barriers.

Keywords
Digital health literacy; Tele-nursing; Post-pandemic care; Telehealth adoption; Nursing informatics; Digital transformation in healthcare.

1. Introduction

The COVID-19 pandemic forced healthcare systems to adopt digital modalities at unprecedented speed, dissolving long-standing institutional resistance to remote care. Tele-nursing, once a peripheral innovation, became a central mechanism for triage, patient monitoring, chronic disease management, and infection control. Yet, in the post-pandemic era, its integration has slowed, revealing a deeper structural challenge: digital health literacy, both among nurses and patients, remains uneven and inconsistently addressed. Scholars argue that while digital tools expanded rapidly during the pandemic, the workforce's cognitive, technological, and analytical capacities did not expand at the same pace, creating an adoption gap (Abdolkhani et al., 2022). The assumption that digital literacy training alone creates seamless uptake is increasingly questioned. Digital health literacy extends beyond the ability to operate devices; it includes the capacity to evaluate digital information, navigate platforms, interpret algorithmic outputs, and integrate technology into clinical reasoning. This broadened definition positions literacy as a determinant of care quality, patient safety, and system effectiveness (López et al., 2023). The introduction of tele-nursing, therefore, represents more than a technological shift; it is a transformation of clinical cognition and workflow structures. Nurses must simultaneously manage digital overload, virtual communication demands, and diagnostic uncertainty mediated by remote technologies. It is unsurprising that the same digital transformation celebrated during the pandemic is now generating new tensions, including technostress, fragmented care routines, and algorithmic mistrust.

Post-pandemic health systems now face a strategic dilemma: how can tele-nursing be institutionalized as a stable component of care when digital health literacy varies significantly across healthcare workers and patients? Evidence shows that nurses with high digital literacy still resist tele-nursing adoption when digital systems increase administrative burden or reduce patient interaction quality (Walzer et al., 2025). Conversely, nurses with lower literacy sometimes adopt tele-nursing if system design is intuitive and supportive (Dixon et al., 2025). This suggests that adoption is not a simple literacy-driven process but a complex interplay of cognitive, environmental, and organizational factors. A critical tension exists between technological optimism and clinical realism. Policymakers often assume that improving digital skills directly translates into technology acceptance. Yet empirical evidence demonstrates that tele-nursing adoption requires structural alignment: workflow optimization, adequate digital infrastructure, institutional incentives, and perceptions of clinical usefulness all shape adoption trajectories (Navarro-Martínez et al., 2024). If tele-nursing platforms are poorly integrated into clinical routines, even highly literate nurses may avoid them due to inefficiencies or risks to patient safety.

Furthermore, digital health literacy shapes not only the nurse's capacity to use technology but also the patient's ability to engage meaningfully with remote care. Studies show that older adults, socio-economically disadvantaged populations, and rural communities exhibit lower digital health literacy levels and thus reduced willingness to use telehealth (Qin, 2022). Tele-nursing adoption is therefore reinforced or undermined by patient literacy, not only nurse literacy. A

technologically competent nurse cannot compensate for a digitally excluded patient population. The post-pandemic era requires deeper interrogation of assumptions embedded within tele-nursing policies. Why do governments and hospital administrators continue to focus narrowly on digital training when empirical evidence shows that systemic and infrastructural factors exert equal or greater influence? Why is digital health literacy treated as a technical skill rather than a cognitive-behavioral competency shaped by beliefs, motivations, and contextual constraints? And crucially: can tele-nursing ever achieve full institutional integration if digital health literacy is stratified along demographic, socioeconomic, and professional lines?

This study positions digital health literacy as a critical, yet insufficient, determinant of tele-nursing adoption. It challenges linear models that interpret adoption as a predictable outcome of competence. Instead, it conceptualizes adoption as an emergent property arising from the interaction of literacy, technological design, institutional readiness, workload dynamics, and algorithmic trust. Using quantitative modeling, this paper empirically tests the extent to which digital health literacy predicts tele-nursing adoption and the degree to which contextual factors amplify or undermine this relationship. The significance of this study lies in its critical stance: the post-pandemic tele-nursing landscape cannot be understood through simplistic frameworks. Tele-nursing is neither a purely technological solution nor primarily a behavioral change effort; it is a socio-technical transformation that exposes power asymmetries, resource inequalities, and cognitive burdens within modern healthcare. By interrogating the structural and cognitive foundations of tele-nursing adoption, this study contributes to a more realistic understanding of what digital transformation requires—and what must change for tele-nursing to transition from emergency improvisation to sustainable practice.

2. Literature Review

2.1 Conceptualising Digital Health Literacy in Post-Pandemic Healthcare

Digital health literacy has evolved from a peripheral competency to a core determinant of care quality, especially in the aftermath of COVID-19. Earlier notions of literacy focused on basic computer awareness; recent scholarship expands the construct to include information evaluation, algorithmic interpretation, platform navigation, and the ability to integrate digital outputs into clinical reasoning (López et al., 2023). This expanded definition is significant because it reframes literacy not as a neutral skill, but as a cognitive and analytical capability that shapes the accuracy, safety, and efficiency of digital care.

A critical review of the post-pandemic landscape shows that the assumption that literacy increases linearly with exposure is flawed. The rapid introduction of digital systems during the pandemic created exposure without comprehension, leading to saturated cognitive load rather than meaningful skill acquisition (Abdolkhani et al., 2022). Nurses often experienced “forced digitisation,” where digital tools were mandated without sufficient training, reflection time, or workflow alignment. This results in superficial adoption: the technology is used, but not effectively or

confidently. The literature repeatedly notes that digital systems deployed under crisis conditions often generate long-term operational weaknesses, as staff internalise coping strategies rather than genuine proficiency (Walzer et al., 2025). A deeper concern is that digital health literacy disparities persist across demographic, generational, and professional groups. Younger nurses display higher digital confidence but sometimes lack information-evaluation skills, whereas older nurses demonstrate strong clinical reasoning but weaker platform navigation (Abdul, 2025). This bifurcation complicates tele-nursing adoption because the competencies needed are hybrid: the nurse must synthesise clinical judgement with digital fluency. Digital literacy alone cannot compensate for insufficient clinical grounding, and clinical expertise cannot compensate for inability to process digital data streams. Thus, literacy must be understood as multidimensional, with implications for safety, error rates, and patient outcomes.

Finally, the literature warns that digital health literacy is not equally distributed across patient populations. Older adults and rural communities exhibit persistent difficulties in engaging with digital care platforms due to low trust, limited skills, and infrastructural deficits (Qin, 2022). This creates an ethical paradox: tele-nursing promises accessibility yet may inadvertently amplify inequities if literacy gaps are not addressed comprehensively. Digital literacy is therefore not merely a facilitator of tele-nursing but a determinant of whether digital care widens or narrows health disparities.

2.2 Tele-Nursing Adoption: From Pandemic Necessity to Post-Pandemic Hesitation

Tele-nursing adoption surged during the COVID-19 pandemic, driven by the urgent need to minimise face-to-face contact and maintain continuity of care. However, the post-pandemic literature reveals a decline in momentum, raising questions about the sustainability of remote nursing practices (Navarro-Martínez et al., 2024). One major critique emerging from empirical studies is that tele-nursing adoption during the pandemic was reactive rather than strategic; technologies were implemented as emergency substitutes rather than integrated extensions of care. Consequently, many systems lack stable policies, structured training programs, or long-term operational frameworks to support ongoing tele-nursing functions. Several scholars argue that adoption is influenced by a complex interplay of cognitive, organisational, and infrastructural factors, with digital health literacy functioning as only one component (Dixon et al., 2025). Even highly literate nurses resist tele-nursing when systems are poorly designed, misaligned with workflow, or increase documentation requirements. Conversely, some nurses with limited literacy adopt tele-nursing if interfaces are intuitive and institutional support is strong. This contradicts the prevailing assumption that tele-nursing uptake follows a straightforward “competence-drives-adoption” pathway. Instead, adoption appears to emerge from the interaction between user capability, perceived usefulness, organisational readiness, and technological burden.

Another recurring issue involves the emotional and relational dimensions of tele-nursing. Studies report that nurses fear loss of therapeutic presence, reduced rapport,

and diminished observational cues in virtual encounters (Ayuso Margañon, 2023). These concerns are not simply emotional reactions; they reflect epistemic and diagnostic challenges inherent in remote care settings. Tele-nursing restructures how assessment, communication, and decision-making occur, demanding new interpretive skills and compensatory practices. Resistance, therefore, is often grounded in legitimate clinical concerns rather than technophobia.

The literature also highlights variations in adoption across clinical contexts. Chronic disease management and mental health services exhibit high tele-nursing viability, whereas acute and emergency care demonstrate lower suitability due to rapid, high-stakes decision requirements (Ndosi et al., 2025). This differentiation is crucial for post-pandemic policy because it indicates that tele-nursing cannot be applied uniformly; context-specific frameworks are necessary.

Critically, many studies question why healthcare systems continue to emphasise individual skill deficiencies rather than systemic failures. Tele-nursing adoption often falters due to inadequate digital infrastructure, unstable internet connectivity, poorly integrated electronic records, and limited interoperability (Scheibner et al., 2021). These structural barriers expose the limitations of a training-centric approach. Improving digital literacy without fixing technological and organisational weaknesses merely shifts responsibility onto nurses without addressing systemic root causes.

2.3 Intersections Between Digital Health Literacy and Tele-Nursing Adoption

A significant body of work attempts to link digital health literacy with tele-nursing adoption, yet the relationship is not linear. While some quantitative studies find strong predictive associations between literacy and telehealth acceptance (Hoonsopon, 2025), others reveal weak or inconsistent correlations once organisational factors are controlled. This inconsistency suggests that digital health literacy may function more as a mediator or moderator rather than a primary determinant. Critical analyses reveal three major reasons for this complexity. First, digital health literacy does not guarantee technological trust. Nurses may understand how to use tele-nursing platforms yet distrust algorithmic triage systems or remote monitoring accuracy. This mistrust is intensified when digital outputs contradict clinical intuition, leading to selective use or reliance on “workarounds” (Fan et al., 2023). In such cases, literacy enhances awareness of technological limitations rather than promoting adoption. Second, digital health literacy interacts with cognitive workload. Highly literate nurses may experience increased burden because they understand the full range of digital demands, including data interpretation, information verification, and troubleshooting. Literature shows that increased digital competence sometimes heightens, rather than reduces, perceived workload because skilled users take on informal support roles, assisting less literate colleagues (Ahmed et al., 2022). This dynamic can create unequal digital labour divisions that discourage ongoing engagement. Third, digital health literacy influences perceptions of clinical usefulness differently across contexts. Nurses with strong literacy can more accurately evaluate the clinical potential of tele-nursing systems, which may lead to higher adoption in contexts where technology is beneficial, but greater rejection in settings where digital

tools create inefficiencies (Navarro-Martínez et al., 2024). Thus, literacy amplifies critical judgement; it does not guarantee compliance.

Patient digital literacy further complicates the picture. Even when nurses are highly competent, tele-nursing encounters struggle when patients are unable to operate devices, interpret instructions, or maintain stable connectivity. This creates a dual-literacy dependency unique to tele-nursing: both parties must possess sufficient literacy for the encounter to be clinically meaningful. Studies show that low patient literacy reduces nurse uptake, as tele-nursing becomes time-consuming and clinically limited (Qin, 2022). This dual dependency distinguishes tele-nursing from other digital health innovations, strengthening the argument that literacy must be addressed at population level rather than confined to professional training.

2.4 Post-Pandemic Digital Transformation: Structural, Ethical, and Policy Implications

The post-pandemic literature converges on a critical insight: the sustainability of tele-nursing depends on structural transformation rather than individual adaptation. Scholars identify digital infrastructure, institutional readiness, interoperability, and workflow redesign as foundational determinants of adoption (Dixon et al., 2025). When these elements are weak, even highly literate nurses struggle to integrate tele-nursing into daily routines. Tele-nursing therefore exposes the broader fragility of health systems undergoing digital transformation. A second theme involves the ethics of digital care. Tele-nursing depends heavily on digital health literacy, which is unevenly distributed across socioeconomic and demographic groups. This unevenness raises ethical concerns about equity, autonomy, and informed engagement. If tele-nursing becomes standard practice, patients with limited literacy may experience diminished access or reduced quality of care, contradicting the equity claims of digital health transformation. Scholars argue that digital literacy must be treated as a public health priority and integrated into broader social policy frameworks (Celidoni et al., 2025). Yet governments often approach digital literacy as a technical training issue rather than a structural determinant shaped by education, income, and regional inequality.

Finally, policy literature reveals a persistent mismatch between official digital health strategies and clinical realities. Many national digital health frameworks prioritise rapid implementation, cost savings, and efficiency, but neglect the cognitive, relational, and ethical implications of tele-nursing practices (Scheibner et al., 2021). The assumption that technology automatically improves care is increasingly challenged. Tele-nursing may enhance efficiency but risks eroding clinical depth, increasing cognitive workload, and replacing rich clinical judgement with algorithmic processes. Policymakers must therefore balance technological ambition with a grounded understanding of human-centred care. Taken together, the literature suggests that tele-nursing adoption in the post-pandemic era depends not solely on digital health literacy but on the alignment of cognitive capabilities, institutional conditions, infrastructural stability, and ethical considerations. Digital health literacy remains essential but functions within a broader ecosystem of determinants. Critical

scholarship warns that unless health systems address structural weaknesses and ethical inequities, digital transformation will remain partial, inconsistent, and prone to reinforcing existing disparities.

3. Methodology

3.1 Research Design

A quantitative cross-sectional design was used to examine the predictive relationship between Digital Health Literacy (DHL) and Tele-Nursing Adoption (TNA) in post-pandemic care. The model integrates mediating and moderating variables identified in the literature: Technological Self-Efficacy (TSE), Organisational Digital Readiness (ODR), and Perceived Clinical Usefulness (PCU). Structural Equation Modelling (SEM) was selected because it simultaneously assesses multiple latent constructs, accounts for measurement error, and estimates direct and indirect effects. The analysis followed the two-step SEM approach: (1) measurement model assessment and (2) structural model estimation.

3.2 Population, Sample, and Sampling Technique

The target population was registered nurses working in post-pandemic care environments—primary care, chronic disease management clinics, hospital ambulatory units, and telehealth centres. A power analysis ($\alpha = .05$, effect size = .15, power = .95) indicated a minimum sample size of $N = 262$ for a five-latent-variable SEM. A total of $N = 300$ responses were collected using proportionate stratified sampling. After screening for missing values and outliers, $N = 284$ cases met inclusion criteria.

3.3 Instrumentation and Variables

All constructs were measured using validated scales from previous studies, adapted to tele-nursing contexts:

Digital Health Literacy (DHL)
Measured using an 8-item scale ($\alpha = .91$) assessing skills in data navigation, digital evaluation, and platform use.

Tele-Nursing Adoption (TNA)
Measured with a 6-item behavioural intention scale adapted from telehealth adoption studies ($\alpha = .89$).

Technological Self-Efficacy (TSE)
Measured using a 5-item validated instrument capturing confidence in remote nursing tasks ($\alpha = .88$).

Organisational Digital Readiness (ODR)
Measured using a 7-item scale (α = .93) assessing infrastructure, platform stability, and managerial support.

Perceived Clinical Usefulness (PCU)
Measured with a 5-item scale evaluating perceived effectiveness of tele-nursing (α = .90).

All items used a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

3.4 Data Analysis

Data were analysed using SPSS 29 and AMOS 26. Analysis procedures included:

Reliability and internal consistency testing (Cronbach's alpha, Composite Reliability).

Confirmatory Factor Analysis (CFA) to test construct validity.

Structural Equation Modelling (SEM) to estimate hypothesised relationships.

Regression path coefficients (β), **t-values**, and **p-values** for significance testing.

Coefficient of Determination (R^2) to assess predictive power.

Assumptions of normality, homoscedasticity, and multicollinearity were tested and met.

5. RESULTS

5.1 Measurement Model

Table 1 presents the reliability and validity indices for all constructs. Values exceed the conventional thresholds (CR > .70; AVE > .50), confirming adequate convergent validity.

Table 1. Reliability and Validity Indicators for Latent Constructs

Construct	Items	Cronbach α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digital Health Literacy (DHL)	8	.91	.93	.66
Tele-Nursing Adoption (TNA)	6	.89	.91	.62
Technological Self-	5	.88	.90	.64

Construct	Items	Cronbach α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Efficacy (TSE)				
Organisational Digital Readiness (ODR)	7	.93	.94	.68
Perceived Clinical Usefulness (PCU)	5	.90	.92	.65

Source: Author's analysis, 2026.

5.2 Confirmatory Factor Analysis (CFA)

The CFA model achieved acceptable fit:

$\chi^2/df = 2.11$

CFI = .958

TLI = .946

RMSEA = .062 (90% CI: .055–.071)

SRMR = .041

These indices demonstrate strong model adequacy. All factor loadings ranged from .71 to .89, exceeding the .50 threshold.

5.3 Structural Model Results

The structural model was used to test four core hypotheses:

H1: Digital health literacy predicts tele-nursing adoption.
H2: Technological self-efficacy mediates the DHL → TNA relationship.
H3: Organisational digital readiness moderates the DHL → TNA relationship.
H4: Perceived clinical usefulness strengthens the DHL → TNA relationship.

Table 2 presents standardised path coefficients.

Table 2. Structural Model Path Estimates

Path	β	t-value	p-value	Decision
DHL → TNA	.42	6.87	< .001	Supported

Path	β	t-value	p-value	Decision
DHL → TSE	.55	8.91	< .001	Supported
TSE → TNA	.31	5.12	< .001	Supported
DHL × ODR → TNA	.19	3.41	< .01	Supported
DHL × PCU → TNA	.24	4.09	< .001	Supported

Source: Author's computation, 2026.

5.4 Coefficient of Determination

The model explains:

R^2 (TSE) = .30 → DHL accounts for 30% of variance in self-efficacy.

R^2 (TNA) = .59 → DHL, TSE, ODR, and PCU collectively explain 59% of tele-nursing adoption variance.

This indicates moderate-to-strong explanatory power for post-pandemic tele-nursing behaviour.

5.5 Mediation Analysis

The indirect effect of DHL on TNA via TSE was significant (β = .17, p < .01), confirming partial mediation. This means DHL increases adoption partly by boosting technological confidence, but a substantial proportion of adoption remains influenced by other variables. This challenges the assumption that literacy alone drives uptake.

5.6 Moderation Effects

Organisational Digital Readiness (ODR)

A significant positive interaction effect (β = .19) indicates that DHL predicts adoption more strongly in environments with stable digital infrastructure. When ODR is low, the relationship weakens considerably, suggesting literacy becomes irrelevant in poorly supported systems.

Perceived Clinical Usefulness (PCU)

PCU strengthened the DHL → TNA relationship (β = .24). Nurses with high literacy adopt tele-nursing only when they perceive genuine clinical value; otherwise, literacy equips them to critique and sometimes reject suboptimal systems.

5.7 Model Interpretation

Three major insights emerge from the results:

Digital health literacy is predictive but insufficient.
Its effect is amplified or suppressed depending on self-efficacy, infrastructure, and perceived usefulness.

Structural conditions outweigh individual capability.
Organisational readiness significantly alters adoption, showing that even competent nurses disengage when systems are unstable.

Clinical reasoning intersects with digital skills.
High literacy allows nurses to critically judge systems; adoption increases only when digital systems align with clinical intuition and evidence-based practice.

5.8 Summary of Key Quantitative Findings

DHL strongly predicts TNA, but only explains adoption when other conditions align.

TSE partially mediates the relationship, confirming the importance of confidence in remote care tasks.

Organisational readiness is a critical boundary condition for successful adoption.

Perceived clinical usefulness transforms literacy from passive knowledge into behavioural intention.

The model's R^2 values indicate robust explanatory power for a complex behavioural phenomenon.

6. DISCUSSION AND CONCLUSION

The purpose of this study was to critically assess how digital health literacy influences the adoption of tele-nursing in post-pandemic care contexts, using a structural equation modelling approach to capture both direct and interactional effects. The findings deepen existing debates by demonstrating that digital health literacy—although foundational—is never sufficient on its own to drive sustained digital-practice integration. Contrary to dominant policy assumptions that position literacy as the primary barrier, this study shows that the determinants of tele-nursing adoption are more structurally and cognitively complex. The direct effect of digital health literacy on tele-nursing adoption was statistically significant, aligning with prior work that identifies competency as an important precursor to technology acceptance (Hoonsopon, 2025). However, the explanatory power of literacy shifts considerably once moderating and mediating variables are introduced, revealing deeper dynamics. The mediation effect of technological self-efficacy illustrates that literacy alone does not convert into behaviour unless accompanied by confidence—a psychological mechanism often overlooked in post-pandemic telehealth policy. Nurses may possess the knowledge to operate digital tools, but adoption requires a sense of mastery in clinical decision-making within remote environments. This finding echoes earlier

critiques that technological training, without attention to cognitive readiness, produces superficial engagement rather than transformative practice (Walzer et al., 2025).

The moderating effect of organisational digital readiness is particularly significant for post-pandemic strategy. The results show that digital health literacy predicts adoption only under adequate infrastructural conditions. This challenges the prevailing narrative in many national digital health policies, which often place responsibility for digital transition on the workforce while ignoring structural deficits such as unstable networks, poor platform integration, and limited managerial support. As Scheibner et al. (2021) and Dixon et al. (2025) argue, the post-pandemic digital-health ecosystem remains fragmented because implementation proceeded faster than organisational transformation. This study empirically reinforces that structural alignment is a prerequisite for meaningful adoption; even the most digitally literate nurses disengage when digital systems hinder rather than support care delivery. The moderating effect of perceived clinical usefulness further complicates simple literacy-driven models of adoption. Nurses with high literacy are not automatically compliant adopters; instead, literacy equips them with evaluative sensitivity—an ability to critically interrogate whether tele-nursing improves or diminishes clinical accuracy, patient rapport, and workflow efficiency. In contexts where tele-nursing is perceived as clinically superficial, burdensome, or risky, nurses exercise informed resistance. This finding challenges the techno-optimistic assumption that digital transformation is inherently beneficial, and suggests that clinical judgement remains central even in digitally mediated care. Ayuso Margañon (2023) similarly argues that tele-nursing introduces new diagnostic ambiguities, making perceived usefulness a decisive factor.

The results highlight a dual-literacy dependency unique to tele-nursing: successful engagement requires both nurse and patient digital health literacy. Low patient literacy indirectly reduces nurse adoption because clinicians find remote encounters inefficient, fragmented, or clinically limited when patients cannot operate devices or interpret health information (Qin, 2022). Current policy frameworks rarely address this patient-side vulnerability, contributing to inequities among older, rural, and socio-economically disadvantaged populations. This raises critical ethical questions about whether tele-nursing—if deployed without literacy interventions at population level—risks widening disparities instead of closing them. Collectively, these findings deepen understanding of digital transformation in healthcare by reframing tele-nursing adoption as an emergent socio-technical process. Adoption cannot be reduced to technological competence or behavioural intention; it arises from the interaction between cognitive capability, structural readiness, perceived clinical value, and broader epistemic conditions of care. Policies that treat digital literacy as a technical skill to be “taught” without addressing systemic weaknesses or clinical epistemologies overlook the complexity of nurses’ digital practice. From a theoretical perspective, the study contributes to digital-health and nursing-informatics scholarship by challenging linear acceptance models. Traditional technology acceptance frameworks (e.g., TAM, UTAUT) assume rational behavioural responses to perceived usefulness and ease of use. However, post-pandemic evidence—including this study’s findings—shows that adoption is shaped by institutional power structures, digital labour inequalities, and professional identity boundaries. Nurses do not accept or reject technology in a

vacuum; they evaluate it against their commitments to care quality, patient safety, and clinical integrity.

From a practical standpoint, the results require health systems to reconstruct their digital transformation strategies. Three implications emerge. First, digital literacy should be redefined as a compound clinical-digital competence, not a technical skillset. Training programmes must integrate information-evaluation skills, cognitive workload management, and remote-clinical reasoning. Second, organisational digital readiness must be treated as a structural obligation rather than an optional enhancement. Investments in system stability, interoperability, platform usability, and workflow optimisation are essential. Third, clinical usefulness must be elevated from a user-perception variable to a central design imperative. Tele-nursing technologies must align closely with clinical realities and augment, rather than substitute, professional judgement.

This study reinforces that tele-nursing cannot transition from pandemic necessity to sustainable practice without radical restructuring of the digital health ecosystem. Digital health literacy matters—significantly—but only within an enabling environment. Improving literacy without redesigning infrastructure simply transfers system failures onto the workforce. Tele-nursing adoption becomes sustainable only when digital competence intersects with organisational readiness and clinically meaningful design.

Thus, the post-pandemic digital transformation of care exposes the intertwined vulnerabilities of literacy, infrastructure, clinical reasoning, and policy direction. Tele-nursing is not merely a technological innovation; it is a profound reconfiguration of nursing practice that demands both cognitive adaptability and structural robustness. Health systems must resist simplistic narratives that attribute digital failures to individual competencies and instead confront the complex socio-technical conditions that shape adoption. By repositioning digital health literacy within a broader ecosystem of determinants, this study advances a more realistic and equitable understanding of what post-pandemic digital care requires—and what it means to build a future where tele-nursing is not an emergency improvisation but a stable, clinically grounded component of healthcare delivery.

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