

Acceptability of Telemedicine Among Nurses Caring for Older Adults: A Quantitative Descriptive Study

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Abstract

Background: Telemedicine, though decades old, saw only limited use until the COVID-19 pandemic, but despite increasing adoption, barriers to using telemedicine remain pervasive.

Objective: We sought to explore the acceptability of telemedicine among nurses caring for older adults by extending the Technology Acceptance Model (TAM).

Methods: A descriptive, non-experimental, quantitative research design was used. An online survey was administered to Slovenian registered nurses experienced in caring for older adults ($n = 244$), of whom 111 with no prior telemedicine experience were included in the analysis. Data were collected between September and December 2023 and analysed using descriptive statistics, Pearson correlations and ordered logistic regression models.

Results: Willingness to use telemedicine was positively associated with perceived usefulness for nursing practice and patient empowerment (both $p < .05$) and negatively influenced by technology anxiety and technology-based ageism (both $p < .05$). Technology anxiety was particularly associated with stronger resistance among the nurses least willing to use telemedicine. Higher self-rated telemedicine knowledge correlated positively with willingness to use telemedicine ($p < .05$), but this relationship ceased to be significant after perceived usefulness and technology anxiety were included in the model. Age was also negatively associated with nurses' willingness to use telemedicine ($p < .05$), suggesting generational barriers.

Conclusion: Extending the TAM with domain-specific measures related to nursing practice and patient empowerment and with affective components – technology anxiety and technology-based ageism – improved its power to explain willingness to use telemedicine among nurses. Telemedicine knowledge is an important external factor, so professional development should help to improve digital skills and address ageist assumptions to support a socially inclusive and confident nursing workforce.

Index Terms

Acceptability of telemedicine; TAM; Technology acceptance model; Digital health technologies; Technology-based ageism; Technology anxiety; Slovenia.

1 INTRODUCTION

Modern healthcare systems are undergoing profound digital transformations, with telemedicine (TM) emerging as a transformative force that is reshaping healthcare delivery and becoming increasingly integrated into healthcare and patient care (Andersson et al., 2023; Clement David-Olawade et al., 2024; Jayousi et al., 2024; Jortberg et al., 2022; Shen et al., 2024).

TM involves the remote exchange of physiological data between a patient at home and healthcare professionals in their workplaces via electronic communication tools, such as two-way video, email, smartphones and wireless devices (Botin et al., 2017; The American Telemedicine Association, 2020). TM was used sporadically by health professionals worldwide prior to the COVID-19 pandemic (OECD, 2023b; Shaver, 2022), when it became an essential and indispensable method of healthcare delivery globally (Omboni et al., 2022) and has since been mainstreamed as a supplement to in-person ambulatory care for both urgent and nonurgent care needs (Alhussein et al., 2023; Mandal et al., 2022, 2025). However, TM has not been adopted consistently everywhere, and in some countries and healthcare settings, its use declined after pandemic restrictions were lifted because some patients and providers preferred in-person visits (Gottlob et al., 2025; Lucas & Wang, 2024).

Despite TM's growing relevance, its use has been reported as posing challenges for older people due to age-related changes in perceptual, motor and cognitive capacities (Khanassov et al., 2024). Further challenges reported include limited support from carers, insufficient access to the necessary technologies, a reluctance to use TM and, in some cases, a lack of digital skills (Alhussein et al., 2023; Kalicki et al., 2021; Roberts & Mehrotra, 2020).

However, there is increasing evidence that these challenges are ageist (Hänninen et al., 2025; Köttl et al., 2023): When older people see the relevance of these technologies and the advantages of learning to use them – and of being taught well – many become confident and competent in engaging with TM (Hänninen et al., 2025). Such ageist attitudes pervade society (Ayalon & Tesch-Römer, 2018), and although beyond the scope of this paper, it is acknowledged that even the term 'older people' is subjective; indeed, the definition can range in age from the over-60s to the over-80s (Kydd et al., 2020; Sedlan König, 2024). For the purposes of this paper, the term 'older' is not precisely defined but is used to reflect the focus on nurses' attitudes toward TM, including their own varying perceptions of what constitutes 'older age'. These perceptions are often shaped by the policies of the healthcare organisations in which they work, which typically define age thresholds for services aimed at older populations.

TM has also been reported as posing challenges for health professionals, including negative attitudes toward its use, lack of familiarity with TM and technology-based ageism – that is, biased assumptions or behaviours toward older adults in digital health contexts (Brewster et al., 2014; Guise & Wiig, 2017; Mannheim et al., 2021; Van Eijk et al., 2024). Nurses – who constitute a substantial proportion of the healthcare workforce – are uniquely positioned to provide high-quality care to older adults in all care settings. Beyond direct patient care, they play a crucial role in clinical governance, care coordination and advocacy, contributing to the development of care pathways that align with older people's personal values, goals and needs (Parker et al., 2020). Moreover, the initiation of TM use often depends on referrals from healthcare providers, and support from nurses can play an important role in patients' willingness to use it (Asua et al., 2012; Prevodnik et al., 2022; Raja et al., 2021; Sheeliya White et al., 2024; Shen et al., 2024).

While telenursing is a valuable and evolving component of telehealth, it is generally considered a more narrowly defined domain that is focused on specific nursing practices, such as delivery and coordination of nursing care using telecommunications technology (Glinkowski et al., 2013; McVey, 2023). In contrast, TM – which is also a domain of telehealth – covers a broader scope of healthcare delivery that encompasses collaboration between healthcare professionals, including nurses, physicians, care assistants and allied professionals (Burrell et al., 2022). TM in nursing practice goes beyond traditional nursing functions and incorporates a variety of applications in medical and nursing specialties. These include tele-triage services, in which nurses remotely assess and monitor patients' conditions; teleconsultations, which allow for real-time interactions between nurses and patients through virtual visits; and tele-education, which supports continuous professional development (Clement David-Olawade et al., 2024). The use of TM in this context therefore reflects the integrated and interdisciplinary nature of modern remote healthcare delivery, in which nurses contribute to broader healthcare processes beyond nursing-specific tasks.

It is thus important to understand the acceptability of TM, nurses' attitudes toward it and their knowledge and acceptance of it (Mun et al., 2024). Attitudes encompass individual beliefs and emotions and significantly influence perceptions and behaviours (Mun et al., 2024), and although attitudes are known to influence the adoption of TM (Asua et al., 2012; Kaye, 2017), they remain under-researched (Chen et al., 2020; Vänni & Salin, 2019). Within the broader framework of technology adoption, acceptability reflects users' willingness to use a technology prior to any direct interaction (Alexandre et al., 2018; Dillon & Morris, 1996; Nadal et al., 2020), while acceptance refers to post-use perceptions based on actual experience (Barcenilla & Bastien, 2010; Nadal et al., 2020). A recent scoping study (Hvalič-Touzery et al., 2024) highlights the importance of considering this temporal dimension and showed that

technology acceptability – a phase of the adoption process that remains underexplored – is primarily influenced by attitudes, individual needs, outcome expectations and ethical concerns. After use, in contrast, a broader set of factors becomes relevant, including technical and organisational aspects, knowledge, experience, patient-related aspects, training/support, perceived usefulness (PU) and perceived ease of use (PEOU) – the latter two being key drivers of acceptance (Bagot et al., 2020; Hvalič-Touzery et al., 2024). The importance of identifying influencing factors for each stage of technology acceptance – and the temporal nature of these stages – was also emphasised by Nadal et al. (2020). Therefore, because PU and PEOU are key theory-driven constructs and thus relevant even before hands-on experience begins, we have included them in our study of the acceptability of TM.

Slovenia provides a particularly relevant setting for this study because TM is developing within a broader national digital health transformation (Hrzic, 2023). Although the country has made progress in implementing eHealth solutions aimed at improving the safety and efficiency of healthcare services (Stanimirović, 2024), the implementation and integration of TM services remain comparatively limited. National strategic documents have increasingly emphasised the development, interoperability and accessibility of TM services (Ministry of Health of Slovenia, 2023; Ministry of Health of Slovenia & National Institute of Public Health, 2025), but despite those policy ambitions, Slovenia still lags behind the most digitally advanced EU member states in TM implementation and integration (European Commission, 2018; Luca et al., 2021; Oliveira Hashiguchi, 2020). This gap is particularly notable because TM has become an increasingly established component of healthcare delivery across the WHO European Region – particularly in chronic disease management and long-term follow-up (Saigí-Rubió et al., 2022).

Before the COVID-19 pandemic (OECD, 2023a), TM was rarely used in Slovenia, and the first national overview of TM highlighted low national uptake, insufficient integration into the health and social care system, and challenges related to funding and long-term sustainability (Rant, 2021; Rant & Rudel, 2021). Existing Slovenian literature from Slovenia describes a small number of TM pilot initiatives and services (Cimperman et al., 2016; Janković et al., 2020; Kaufman et al., 2020; Prevodnik et al., 2022), while the few TM studies in the past decade have primarily focused on the management of chronic conditions (Dolničar et al., 2024; Janković et al., 2020; Kaufman et al., 2020; Mihevc et al., 2023; Prevodnik et al., 2022; Rudel et al., 2016) and on rehabilitation (Kovač et al., 2022). Slovenian research on user experiences and the pre-use acceptability of TM among potential users therefore remains limited.

The aim of the current study is to better understand the complex factors that influence nurses' willingness to use TM before any actual use, with a particular focus on those who have experience working within services for older people. These nurses represent a substantial segment of the healthcare workforce and are well positioned to support technology-driven transformations in healthcare and long-term care. The specific objectives of the study are therefore to (1) examine how core constructs from the Technology Acceptance Model (TAM) and additional factors drawn from extended TAM models (extended PU factors and technology anxiety [TA]) relate to nurses' willingness to use TM and (2) explore the role of technology-based ageism as an additional influencing factor in this context.

1.1 Theoretical framework

The theoretical framework of this study uses the original TAM (Davis, 1989), augmented by the findings of a recent study by Hvalič-Touzery et al. (2024), and draws conceptually from broader psychological theories of attitude formation – particularly the Theory of Planned Behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980). Within this framework, we acknowledge the importance of considering technology-based ageism as a factor that may shape nurses' perceptions of – and engagement with – digital technologies in the care of older adults (Mannheim et al., 2023; Neiertz et al., 2023).

The TAM posits that technology use is determined by an individual's beliefs, attitudes and behavioural intentions. The original TAM identified two internal variables as predictors of actual system use (Davis, 1989): PEOU and PU. Across TAM-based research and its various extensions, these two constructs are the most frequently used measures of the cognitive components of attitude (Davis, 1989; de Kok et al., 2020). TA – an affective component defined as the experience of negative emotions toward technologies (Saadé & Kira, 2009; van Houwelingen et al., 2017) – is also increasingly recognised as an important determinant of technology acceptance, particularly in healthcare settings (AlQudah et al., 2021; Edo et al., 2023; Walle et al., 2023). In addition, knowledge – as an external factor – plays an important role and is considered a key precondition for the formation of behavioural intention (de Kok et al., 2020).

The Theory of Planned Behaviour conceptualises an individual attitude as composed of both a cognitive (rational) and an affective (emotional) component, which together directly influence behavioural intention (Edison & Geissler, 2003; Perlusz, 2004). Given the importance of attitudes and expectations in shaping the pre-use acceptability of TM among nurses, we therefore extended the original TAM framework to better capture both the cognitive and affective components of attitudes toward TM. This extension is also consistent with Holden et al.'s (2016) argument that the classic TAM does not fully account for the complexity of technology adoption in healthcare settings; they proposed two healthcare-specific extensions to the PU construct: usefulness for nursing care delivery and usefulness for patient involvement.

We argue that these dimensions offer a more nuanced understanding of how digital technologies can support both clinical workflows and patient-centred care. This framework (Figure 1) therefore provides a valuable conceptual basis for exploring the applicability and relevance of TM in nursing practice, particularly in the care of older adults.

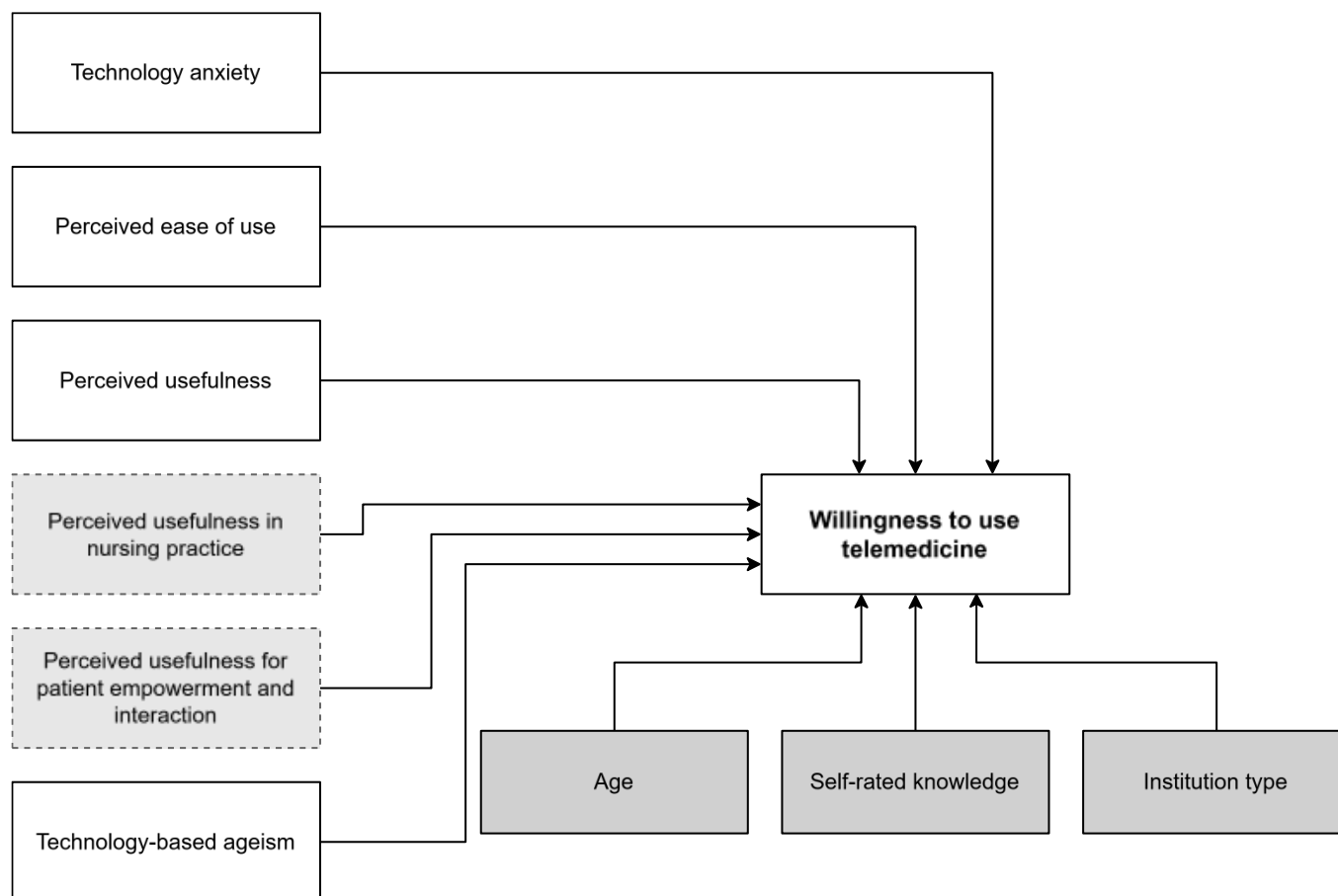


Figure 1. Theoretical framework of willingness to use telemedicine among nurses. The constructs perceived usefulness in nursing practice and perceived usefulness for patient empowerment and interaction were adapted from Holden et al. (2016) to better reflect the context of the current study.

2 METHODS

2.1 Study design and data collection

A cross-sectional, non-experimental, quantitative research design was used in this study. The population was Slovenian registered nurses who had at least the minimum qualification required for registered nurses and professional experience in caring for older adults but who did not have experience with TM. In Slovenia, 22% of the population is over the age of 65 – the largest group requiring health and social care services (Statistical Office of Republic of Slovenia, 2025). However, the country does not have a nationwide network of specialised geriatric care facilities, so we targeted nurses working with older people in a diverse range of settings where care is provided irrespective of age, including university clinical centres, primary healthcare settings and both general and specialised

hospitals. As some frail older people require specialised residential care, we also included nursing homes. Including nurses from these diverse settings allowed us to capture the range of contexts in which care for older adults is provided and where TM could potentially be implemented.

The use of TM varies between different healthcare environments. Community nurses and those working in family medicine practices are particularly well placed to use TM in supporting older adults at home, especially within the scope of primary care. Hospital nurses may use TM in follow-up care after hospital discharge or for remote monitoring of patients with complex health conditions, as demonstrated during the COVID-19 pandemic. Although nurses in nursing homes interact with residents in person, they can nevertheless act as intermediaries by measuring vital signs and transmitting relevant health information to specialists using TM technologies.

Because no comprehensive national-level sampling frame was available for the target population, purposive sampling was used. Participants were recruited through multiple professional and institutional channels, including the Nurses and Midwives Association of Slovenia, the National Institute of Public Health of the Republic of Slovenia and Slovenian nursing homes.

In total, 244 eligible registered nurses with experience caring for older adults completed the survey. After excluding incomplete responses and respondents with experience using TM, a final sample of 111 respondents was included in the main analysis. The data were collected using a self-administered web questionnaire, which was made available between September and December 2023 (see Appendix A). The questionnaire (see section 2.2) was developed by the research team, drawing on established theoretical and empirical frameworks (Davis, 1989; Dolničar et al., 2022; Holden et al., 2016; Mannheim et al., 2021; Venkatesh et al., 2003). To ensure conceptual clarity, content validity and cultural appropriateness, the instrument underwent a rigorous pre-testing process that followed the TRAPD (translation, review, adjudication, pre-testing and documentation) methodology (Survey Research Center, 2016). This ensured an accurate and culturally sensitive translation of survey items into Slovenian while preserving the original meaning. The process included expert reviews and cognitive interviews designed to identify and resolve potential substantive, methodological or technical issues before the questionnaire was finalised and fielded (see section 2.2). Eligibility for participation was determined through screening questions that assessed the respondents' professional qualifications and their experience in caring for older adults.

The study adhered strictly to principles of anonymity and informed consent. All procedures conformed to national and international ethical standards, including the General Data Protection Regulation (GDPR).

2.2 Measures

To comprehensively assess attitudes, we measured the cognitive and affective components separately. The cognitive component was assessed using two widely used concepts from the TAM (de Kok et al., 2020): PU and PEOU (Davis, 1989). We also incorporated two domain-specific constructs informed by the work of Holden et al. (2016): PU in nursing practice (PU-NP) and PU for patient empowerment and interaction (PU-PEI). These two constructs were adapted to better reflect the context of our study: PU-NP was designed to capture both clinical utility and broader considerations, such as organisational relevance and the integration of digital tools into nursing practice, and PU-PEI was developed to go beyond the original patient–family focus and to emphasise patients' direct interaction with healthcare professionals and their empowerment, perceived safety and active involvement in managing their own health. PU was measured using three items, PEOU with two items and both PU-NP and PU-PEI with four items each (see Appendix A). The participants responded to the items using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alphas indicated high internal consistency for PU ($\alpha = 0.93$), PU-NP ($\alpha = 0.83$) and PU-PEI ($\alpha = 0.90$). For the two-item PEOU measure, reliability was estimated using the Spearman–Brown coefficient, which was also high ($\rho_{SB} = 0.86$).

The three aspects of PU were both theoretically expected and empirically found to correlate strongly ($\rho = 0.83$ for PU and PU-NP, $\rho = 0.63$ for PU and PU-PEI, and $\rho = 0.75$ for PU-NP and PU-PEI). Confirmatory factor analysis (CFA) was used to validate the hypothesised distinction between the three aspects of PU (PU, PU-NP and PU-PEI). Because the CFAs address the measurement properties of the instrument rather than the substantive relationships examined below, they were estimated on all respondents from the total sample of 244 eligible registered nurses who provided complete data on the items included in the respective measurement model, rather than only on the 111 respondents

included in the main analyses. As the models comprise different sets of items, the complete-case sample sizes differ ($n = 189, 194$ and 188 ; see Tables B1–B5 in Appendix B).

The results supported a three-factor latent structure. Standardised loadings were all significant ($p < 0.01$) and ranged between 0.70 and 0.91, and the overall model fit was good ($\chi^2(41) = 62.01$, $p = 0.02$, RMSEA = 0.05, CFI = 0.99, TLI = 0.98, SRMR = 0.023). Although the results supported the theorised three-factor structure, an alternative two-factor model – combining the highly correlated PU and PU-NP factors – was also tested; this alternative demonstrated a poorer fit. Further results of the CFAs are provided in Appendix B. The affective component was assessed using two items measuring TA, based on the work of Venkatesh et al. (2003). One item was related to the fear of using TM, while the other captured feelings of apprehension (see Appendix A). The participants responded using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The Spearman–Brown reliability of this two-item measure was relatively low, but acceptable ($\rho_{SB} = 0.68$).

CFA was then used to confirm the factor structure of the original TAM predictors (i.e., PU, PEOU and TA) as well as the modified model that replaced PU with the two domain-specific PU constructs (PU-NP, PU-PEI, PEOU and TA). For the former model, all standardised factor loadings were significant, ranging from .70 to .93, and the model fit was adequate ($\chi^2(11) = 23.50$, $p = .02$, RMSEA = .08, CFI = .98, TLI = .97, SRMR = .03). For the latter model, the standardised factor loadings remained significant, ranging from .67 to .92, with overall good fit ($\chi^2(48) = 83.79$, $p < .01$, RMSEA = .06, CFI = .97, TLI = .96, SRMR = .05).

Technology-based ageism was measured using the Attitudes Toward Older Adults' Abilities to Use Technology scale (ATOAUT-10) (Mannheim et al., 2021, 2023), which consists of ten items that measure stereotypes and prejudices regarding older adults and their use of digital technologies. To illustrate which digital technologies we had in mind, we gave examples, such as smartphones, smartwatches and tablets, which are often used in TM. The responses used a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). A total score was calculated (range: 10–50), with higher scores indicating a more negative attitude toward older adults' ability to use digital technologies. The internal consistency of the scale was good ($\alpha = 0.82$).

Self-rated knowledge (KNOW) of TM was measured as an average rating of two statements responded to using a five-point agreement scale: 'I have the required knowledge to use telemedicine' and 'I have sufficient skills to use telemedicine'. These statements were adopted from a questionnaire by Dolničar et al. (2022). The Spearman–Brown reliability of this measure was moderate ($\rho_{SB} = 0.79$).

To measure willingness to use TM (WU TM), the respondents were asked, 'How likely is it that you personally would like to use telemedicine in your work?' There were five response options: 1 = 'Definitely not', 2 = 'Probably not', 3 = 'Maybe yes, maybe no', 4 = 'Probably yes', 5 = 'Definitely yes'. This question was adapted from the TAM behavioural intention item (Davis, 1989). Because the use of TM in healthcare organisations is not solely an individual decision but also depends on the work environment, we focused exclusively on assessing respondents' personal WU TM. Furthermore, while TAM items are typically measured on an agreement scale, we also wanted to gather more specific information about how willing the respondents were to use TM in the future. We therefore opted for a question with more precise response options. In addition to these measures of latent constructs, we also asked for age and type of institution as additional background variables.

2.3 Data analysis

We used correlational and regression analyses to examine the factors affecting nurses' WU TM, beginning with Pearson correlations between the constructs. Because the WU TM outcome variable was measured using one item with five discrete values, we also used ordered logit – also known as proportional odds – modelling to analyse the effects of individual factors on WU TM.

To assess the contribution of additional predictors to the explanatory power of the model, we calculated several nested models, but high multicollinearity prevented the simultaneous inclusion of the original TAM measure of PU and separate measures of usefulness for patients and for care delivery. We therefore fitted separate models for the original TAM measure and for the alternative approach. Likelihood ratio tests (for nested models), the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) were used as the main quantitative indicators of model fit to compare the performances of the different models. Data analysis was performed using Stata 16.1 software.

3 RESULTS

3.1 Respondent characteristics

A total of 244 registered nurses who had work experience with older adults completed the survey. Of these, 62 (25%) reported being current TM users and 29 (12%) past TM users, while 18 (7%) did not answer the question about TM use. The remaining 135 (55%) nurses reported no prior work experience with TM, although 24 were excluded from the analysis for not fully completing the questionnaire. A total of 111 respondents were therefore included in the following analysis.

The mean age of the respondents was 41.8 years ($SD = 10.1$). The majority were female and held an academic higher degree. Nearly half worked in community health centres, more than a quarter in nursing homes and about a fifth in hospitals. Most worked in urban areas (Table 1).

Table 1. Selected characteristics of the participants ($n = 111$).

Characteristic	Proportion
Age*	
20–29 years	12%
30–39 years	30%
40–49 years	33%
50 years or more	25%
Gender	
Female	95%
Male	5%
Education	
Professional higher	6%
Academic higher	83%
Master's	11%
Type of institution	
Community health centre	45%
Hospital	22%
Nursing home	28%
Other	5%

Note: * Additional descriptives for age: mean = 41.8, $SD = 10.1$, median = 41, $Q1 = 34$, $Q3 = 50$, min = 23, max = 72.

3.2 Construct characteristics and correlations

Table 2 summarises the basic descriptive statistics of the constructs included in the correlational analyses and models.

Table 2. Descriptive statistics of the measured constructs ($n = 111$).

Variable	Mean	SD	Median	Q1	Q3	Min	Max
Willingness to use	3.23	1.21	3.00	2.00	4.00	1.00	5.00
Self-rated knowledge	2.55	0.94	2.50	2.00	3.00	1.00	5.00
Technology anxiety	2.76	0.86	3.00	2.00	3.00	1.00	5.00
Perceived ease of use	3.27	0.83	3.50	3.00	4.00	1.00	5.00
Perceived usefulness	3.05	0.97	3.00	2.67	4.00	1.00	5.00
Perceived usefulness in nursing practice	3.22	0.76	3.25	2.75	3.75	1.00	5.00
Perceived usefulness for patient empowerment and interaction	3.27	0.84	3.25	3.00	4.00	1.00	5.00
Technology-based ageism	3.52	0.56	3.50	3.10	3.90	2.10	4.80

Examination of bivariate correlations between the measured constructs (Table 3) reveals that WU TM was significantly correlated with all the other studied constructs. The correlations between WU TM and all three aspects of PU were strong and positive, ranging from 0.5 to 0.6. As expected, TA and technology-based ageism both correlated negatively with WU TM, with the former correlation being strong and the latter weak.

Table 3. Pearson correlation coefficients between measured constructs ($n = 111$).

	WU TM	KNOW	TA	PEOU	PU	PU-NP	PU-PEI
WU TM							
KNOW	0.29*						
TA	-0.44*	-0.35*					
PEOU	0.35*	0.53*	-0.38*				
PU	0.53*	0.40*	-0.36*	0.47*			
PU-NP	0.59*	0.29*	-0.36*	0.45*	0.83*		
PU-PEI	0.60*	0.19*	-0.35*	0.38*	0.63*	0.75*	
ATOAUT-10	-0.22*	-0.14	0.05	-0.31*	-0.12	-0.14	0.00

Notes: WU TM: willingness to use telemedicine; KNOW: self-rated knowledge; TA: technology anxiety; PEOU: perceived ease of use; PU: perceived usefulness; PU-NP: perceived usefulness in nursing practice; PU-PEI: perceived usefulness for patient empowerment and interaction; ATOAUT-10: technology-based ageism; * $p < 0.05$

All correlations were significant, except for those with technology-based ageism, which significantly correlated only with WU TM and PEOU. The correlation between PU – as measured by the original TAM model – and PU-NP was particularly strong and exceeded 0.80, suggesting that the two factors measure similar latent aspects of PU and contribute to high multicollinearity; this prevented simultaneous inclusion of the two factors in the models, as noted above.

3.3 Effects of predictors on willingness to use telemedicine

Table 4 presents three nested proportional odds models with progressive inclusion of additional predictors. The initial model (Model 1) contained only age and two contextual predictors, with self-rated knowledge being a positive – and the sole significant – predictor of WU TM, consistent with expectations. Neither age nor the type of institution (healthcare versus social care or other institution) had a significant effect.

The addition of TAM predictors (TA, PEOU and PU) in Model 2a provided substantially more insights into the factors affecting WU TM. The effect of self-rated knowledge became nonsignificant, while age became a significant negative predictor. In this model, WU TM increases with PU and decreases with higher TA, while PEOU does not have a significant effect.

Notably, the strongest effects of both TA and PU are observed at the lower thresholds of WU TM, particularly in differentiating respondents who are definitely unwilling from those expressing only slight openness. This pattern indicates that high TA reinforces strong resistance to TM and that high PU is especially important for reducing such resistance.

The addition of technology-based ageism (Model 3a) adds further explanatory value without substantially altering the existing relationships. It has a significant negative effect, indicating that greater ageism reduces WU TM. After replacing PU with the more specific measures of PU-NP and PU-PEI (Table 5), the models remained largely consistent with the previous version but with additional insights. Model 1 replicated the baseline structure, with self-rated knowledge again the only significant predictor of WU TM, while age and institutional type were nonsignificant.

After the addition of TA, PEOU and the two domain-specific aspects of PU (Model 2b) self-rated knowledge lost significance, while age became a significant negative factor. PU-NP and PU-PEI both had significant positive effects, with the latter being somewhat stronger. TA continued to have a strong negative effect, particularly at the lower thresholds of willingness, suggesting that high anxiety is especially influential in reinforcing firm resistance to TM.

PEOU did not significantly predict willingness. Adding technology-based ageism (Model 3b) again somewhat improved the model's explanatory value while the pattern of other effects remained the same.

Table 4. Nested ordered logit models of willingness to use telemedicine and Technology Acceptance Model predictors ($n = 111$).

	Model 1		Model 2a		Model 3a	
	Coef.	SE	Coef.	SE	Coef.	SE
Age	-0.01	0.02	-0.04	0.02*	-0.04	0.02*
Healthcare institution vs. social or other	0.32	0.40	-0.03	0.43	0.14	0.43
Self-rated knowledge	0.61	0.20*	-0.06	0.26	-0.05	0.26
Technology anxiety [†] P(Y > 1) vs. P(Y ≤ 1)	-	-	-1.83	0.68*	-1.97	0.70*
P(Y > 2) vs. P(Y ≤ 2)	-	-	-0.22	0.41	-0.15	0.42
P(Y > 3) vs. P(Y ≤ 3)	-	-	-0.77	0.33*	-0.75	0.33*
P(Y > 4) vs. P(Y ≤ 4)	-	-	-0.98	0.44*	-1.01	0.43*
Perceived ease of use	-	-	0.33	0.32	0.17	0.32
Perceived usefulness [‡] P(Y > 1) vs. P(Y ≤ 1)	-	-	2.37	0.73*	2.38	0.73*
P(Y > 2) vs. P(Y ≤ 2)	-	-	0.65	0.33	0.71	0.34*
P(Y > 3) vs. P(Y ≤ 3)	-	-	0.91	0.30*	0.98	0.31*
P(Y > 4) vs. P(Y ≤ 4)	-	-	0.99	0.43*	1.07	0.44*
Technology-based ageism	-	-	-	-	-0.75	0.35*

Notes: LR: likelihood-ratio; SE: standard error; Model 1: LR $c^2 = 11.9^*$, Model 2a: LR $c^2 = 72.9^*$, Model 3a: LR $c^2 = 77.5^*$; * $p < 0.05$; [†] For these predictors, the proportional odds assumption was relaxed, resulting in threshold-specific coefficients (cut-off points). For predictors for which the assumption held, a single coefficient is reported across thresholds.

Table 5. Nested ordered logit models of willingness to use telemedicine and domain-specific predictors of perceived usefulness ($n = 111$).

	Model 1		Model 2b		Model 3b	
	Coef.	SE	Coef.	SE	Coef.	SE
Age	-0.01	0.02	-0.05	0.02*	-0.05	0.02*
Healthcare institution vs. social or other	0.32	0.40	-0.17	0.46	-0.06	0.46
Self-rated knowledge	0.61	0.20*	0.12	0.26	0.13	0.26
Technology anxiety [†] P(Y > 1) vs. P(Y ≤ 1)	-	-	-1.32	0.67*	-1.45	0.70*
P(Y > 2) vs. P(Y ≤ 2)	-	-	0.17	0.42	0.22	0.42
P(Y > 3) vs. P(Y ≤ 3)	-	-	-0.80	0.35*	-0.83	0.37*
P(Y > 4) vs. P(Y ≤ 4)	-	-	-0.97	0.45*	-1.01	0.45*
Perceived ease of use	-	-	0.12	0.33	-0.12	0.34
Perceived usefulness in nursing practice	-	-	1.04	0.42*	0.98	0.43*
Perceived usefulness for patient empowerment and interaction	-	-	1.22	0.38*	1.37	0.39*
Technology-based ageism	-	-	-	-	-0.95	0.37*

Notes: LR: likelihood-ratio; Model 1: LR $c^2 = 11.9^*$, Model 2b: LR $c^2 = 87.8^*$, Model 3b: LR $c^2 = 94.6^*$; * $p < 0.05$; [†] For this predictor, the proportional odds assumption was relaxed, resulting in threshold-specific coefficients (cut-off points). For predictors for which the assumption held, a single coefficient is reported across thresholds.

The model fit statistics (Table 6) show that adding TAM predictors (Model 2a) significantly improved the model fit over the initial model (Model 1). The addition of technology-based ageism as a predictor (Model 3a) provided a further significant – albeit small – improvement. The same pattern was observed when measures of PU-NP and PU-PEI were used instead of the original TAM PU construct (Models 2b and 3b); pseudo R^2 values suggest that these models were a slightly better fit, which is reinforced by the two information criteria (AIC and BIC), which both suggest that the better fit outweighs the increased complexity of the models that used PU-NP and PU-PEI instead of PU.

Table 6. Comparison of fit of the nested ordered logit models ($n = 111$).

	Pseudo R2	LR against simpler model	AIC	BIC
Model 1	0.04	-	341.9	360.8
Model 2a	0.21	60.9*	298.9	342.3
Model 3a	0.23	4.7*	296.3	342.3
Model 2b	0.26	75.9*	280.0	317.9
Model 3b	0.28	6.8*	275.2	315.8

Notes: LR: likelihood-ratio; AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; * $p < 0.05$

4 DISCUSSION

4.1 Substantive findings

This study examined the factors influencing nurses' WU TM prior to its use, with a focus on those working with older adults. To better capture the complexity of this context, we drew on the original TAM (Davis, 1989), which is a widely used theory in health technology research (Rouidi et al., 2022). However, despite its strengths, the original TAM does not fully capture attitudinal and normative influences (Holden et al., 2016), such as TA or age-related stereotypes, which are particularly relevant in healthcare contexts involving older adults. To address these conceptual limitations, we extended the model by including two additional constructs: TA and technology-based ageism. Drawing on Holden et al.'s (2016) framework, we further adapted the model by operationalising two tailored dimensions of PU: PU-NP and PU-PEI. The explanatory power of socio-demographic factors, the contribution of the original TAM constructs, the added value of the extended constructs of PU and the role of technology-based ageism in shaping TM acceptability will each be discussed in turn.

The initial model, which considered socio-demographic variables, showed limited explanatory power. Only self-rated knowledge significantly predicted WU TM, supporting previous findings that greater familiarity and understanding of technology and greater confidence in digital skills increase acceptance among nurses (Chow et al., 2012; Taylor et al., 2015; Zailani et al., 2014) and that, more broadly, attitudes and prior technology experience influence healthcare professionals' willingness and motivation to use TM (Konttila et al., 2019).

The addition of TA and the original TAM constructs significantly improved the predictive strength of the model and explained an additional 17% of the variance in WU TM. Consistent with the TAM (Davis, 1989; Venkatesh, 2000) and prior research (Bagot et al., 2020), PU was the strongest predictor (Bagot et al., 2020; Holden et al., 2016; Hvalič-Touzery et al., 2024). PEOU was not a significant predictor, which may be attributed to the study's focus on acceptability rather than actual usage: The participants' capacity to meaningfully evaluate ease of use may have been limited in the absence of direct experience. Previous studies have indicated that users develop more accurate perceptions about technology usability after they start using it because they can experience its actual functionality (Felber et al., 2024; van Houwelingen et al., 2015); this distinction shows the importance of differentiating between pre-use acceptability and post-use acceptance because the impact of the factors that influence willingness to use can change after users have gained practical experience with a system.

TA was negatively associated with TM acceptability, indicating stronger resistance toward its use, which is consistent with existing research that has identified TA as a key obstacle to the adoption of digital health technologies by nurses (Jedwab et al., 2022; Ngusie et al., 2024; Senthilrajah & Ahangama, 2025). However, contrary to findings from a Dutch study that found no significant link between nurses' age and their willingness to use health technology

(van Houwelingen et al., 2015), we identified age as a negative predictor, suggesting that older nurses may encounter greater barriers to TM acceptability. Such reluctance has been associated with limited prior exposure to technology (Taylor et al., 2015) and a preference for familiar workflows (Coffetti et al., 2023). However, older nurses would also not have had TM as part of their nurse training; caution has to be exercised with the findings of this small study, but as 58% of the participants were over the age of 40 (with 25% of the participants aged over 50), this point is worth noting because it suggests that educational provision in TM must address nurses' prior knowledge, training and experience in digital skills. Thus, rather than age per se, the focus should be on past exposure to digital skills.

Technology-based ageism was found to be a significant negative predictor, suggesting that ageist assumptions about older adults' technological capabilities impede acceptability beyond just general anxiety. This effect appeared without altering the influence of the other predictors, indicating it acts as an independent barrier. If nurses do not believe older people will be able to use technology, they cannot inspire them to accept and learn to use it, which is consistent with the broader literature on ageism – including self-ageism, in which older people do not have the intention nor believe they have the capacity to use technology. McDonough (2016), for example, wrote of the 'digital divide', in which some older people lack the confidence and self-efficacy to learn and use technology, but also reported that if older people see the benefits of using technology, they are more likely to adopt it. We suggest that nurses could ameliorate this reluctance through skilled teaching and emphasising the benefits of using TM.

McDonough (2016) also cited evidence that older people – and indeed people with mild cognitive deficits – not only pick up the skills when taught but also then experience improvements in cognition. Mannheim et al. (2023) noted that ageism remains an underexplored and biased factor in models of technology acceptance and called for further research to better understand its impact on digital health technology adoption and to challenge prevailing stereotypes about older adults. Similarly, Neiertz et al. (2023) found that health professionals with more negative attitudes toward older adults using technology are significantly more likely to withhold digital interventions based solely on age and noted the real-world implications of such ageist biases in clinical decision-making. This point was reiterated in a policy brief by Köttl and Mannheim (2021), who stated that older people are stereotyped regarding their perceived lack of ability to learn and use digital technology; we therefore call for all educational programmes to address ageist assumptions that nurses may have so that digital technology use can be inclusive of all people, regardless of their age.

The second set of models retained all predictors from the first but replaced the PU construct from the original TAM with two context-specific dimensions: PU-NP and PU-PEI. Due to multicollinearity between the general measure of PU and the domain-specific PU-NP dimension, the two were not included in the same model. This was supported by a CFA, which confirmed that, despite a high correlation between them, it is preferable to treat the domain-specific PU-NP dimension as distinct from the general PU measure rather than collapsing the two into a single construct.

This conceptual refinement further enhanced the model's predictive strength and interpretability. PU-PEI demonstrated the strongest effect on nurses' WU TM, suggesting that nurses are particularly motivated to adopt TM when they perceive it as a means to foster patient engagement, autonomy and safety, which is consistent with prior research (Hvalič Touzery et al., 2025; van Houwelingen et al., 2015). Previous studies have also found that nurses' beliefs about TM's benefits, such as improved patient monitoring and clinical decision-making, play a central role in shaping attitudes toward and acceptability of such technologies and thus their eventual adoption (Bagot et al., 2020; Canfield & Galvin, 2018; Li & Cotton, 2019). Although both of the specific PU dimensions contributed meaningfully to the model, the greater influence of the patient-centred construct suggests the value of context-sensitive operationalisation of PU in understanding technology acceptability among nurses. Notably, this refinement did not alter the significance or direction of the remaining predictors, reinforcing the robustness of the proposed model.

Overall, the results suggest that, while the TAM remains a valuable theoretical anchor, its explanatory capacity can be meaningfully extended by integrating context-sensitive constructs, which can then offer a more comprehensive and nuanced understanding of TM acceptability, particularly within the complex dynamics of ageing and healthcare.

4.2 Implications for practice and policy

This study has several implications for nursing practice (Text Box 1). In particular, there is an urgent need for nursing education to adapt to ongoing digital transformations because only well-prepared nursing graduates and digitally

confident and competent nurses will be equipped to meet the professional demands of digital healthcare, now and in the future.

Text Box 1. Key implications for practice.

- Nurses need to be educated to see that they play a central role in promoting digital transformation in healthcare, not only as primary users of digital health technologies in clinical settings, but also as educators and agents of change.
- Training programs should focus on strengthening digital self-efficacy, fostering positive attitudes towards innovation and creating a supportive and inclusive work environment.
- Technology anxiety should be addressed using educational interventions that go beyond technical skills development.
- Nurse educators need to promote a clear understanding of the added value of telemedicine, particularly its potential to empower patients and improve nursing practice.
- Experiences of patients should play a central role in any training programs.
- Education should include the factors affecting nurses' acceptability of telemedicine in their workplaces, with additional considerations to identifying any prejudices and bias towards marginalized groups, namely older people, people with neuro diverse conditions, migrant groups and people with learning disabilities. By integrating equity and inclusion awareness into educational programs, healthcare organizations can foster a digitally confident and socially responsible nursing workforce, while simultaneously enhancing empathy, dispelling misconceptions about marginalized groups, and reducing prejudice and discrimination through accurate information and counter-stereotypical examples.
- Nursing curricula and educational programs should be systematically revised to incorporate both digital health technologies that evolve within digitalized healthcare systems and any changes to policy and practice documents.
- Professional development and the integration of digital competencies into the workforce must be prioritized not only as part of undergraduate and postgraduate nursing education but also as an integral component of continuing professional development and part of lifelong learning for practicing nurses and nurse educators.
- Training must fit nurses' learning needs, offer on-the-job support, and be backed by leaders who understand the importance of aligning technology with both tasks and individual users.
- Telemedicine is not the preserve of any one specialty; practitioners need to be schooled to be cognisant of current policy documents that call for the sustainable integration of TM into clinical practice across all specialties in healthcare.

4.3 Strengths, limitations and future research directions

This study offers several notable strengths to enhance the understanding of factors influencing the acceptability of TM among nurses. First, it specifically addressed the pre-use phase of TM and focused on acceptability rather than post-implementation acceptance. This phase is critical, yet under-researched, because attitudes formed early can shape later engagement and sustained use.

Second, by including new components of PU and TA, the study provides a more comprehensive view of nurses' attitudes, capturing both cognitive and affective dimensions. This expanded conceptualisation enables a deeper understanding of the complexities associated with technology adoption in healthcare, in which emotional responses and rational perspectives often intersect.

Third, the study focused on nurses working with older adults and introduced the concept of technology-based ageism – a new construct in healthcare technology adoption research. In recognising how age-based bias can influence TM acceptability and the perception of its usefulness for older people, the study contributes to a more nuanced and comprehensive exploration of the implementation of digital health solutions. Future research could then include intervention studies aimed at evaluating the effectiveness of educational programmes that are specifically designed to reduce TA and address implicit ageism among nurses. Such interventions could play a key role in enhancing TM acceptability, particularly among those who are more hesitant to adopt digital tools.

This study also has limitations. First, it explored factors affecting TM acceptability among only nurses with no prior experience of using TM, although the same factors may also be relevant to nurses who already use TM in practice. Future research should therefore examine how these factors influence different stages of the adoption process, and comparative research that includes nurses with prior TM experience could help to distinguish between anticipated barriers prior to adoption and challenges that emerge during actual use. For instance, the impact of technology-based ageism may decrease and the impact of PEOU increase as nurses gain hands-on experience with TM and interact directly with patients.

Second, the study did not account for several contextual and organisational factors that may shape nurses' willingness to adopt TM in clinical practice, including organisational support, workload, infrastructure-related

conditions and concerns regarding nurse–patient relationships. Historically, nurses have played a very person-centred role in health care delivery, and we did not examine whether nurses were reluctant to adopt TM for fear it may replace the personal touch of face-to-face encounters. Future qualitative and mixed-methods studies exploring these contextual and relational factors would therefore further enrich understanding of TM acceptability among nurses.

Third, the sample was relatively small and was recruited through professional networks, which limits the generalizability of the results even to the population of nurses as a whole. The results should therefore be interpreted with caution. Participants who chose to participate in this online study may differ significantly from those who did not participate, which could influence the results of the study. This selection bias may have been exacerbated by the use of a web-based survey because nurses who are more digitally engaged, more comfortable using technology or more interested in TM may have been more likely to participate. The study may therefore underrepresent nurses with less digital confidence or less favourable attitudes toward technology, potentially leading to positively biased assessments of TM acceptability. Larger and more diverse samples using probability-based sampling, where feasible, would help to improve representativeness and external validity.

Fourth, the study used a single item to measure WU TM. Although this approach provided an initial assessment of the construct, it may not have fully reflected the multidimensional nature of behavioural intent and did not permit assessment of internal consistency. Future research would benefit from a validated multi-item scale to capture WU TM in a more comprehensive and psychometrically robust manner.

5 CONCLUSION

This study identified key factors that influence nurses' WU TM, particularly when working with older adult patients. Nurses are most willing to use TM when they find it useful for their practice and patient empowerment, but TA is associated with less willingness. Nurses who have greater self-rated knowledge of TM tend to accept it more readily, which supports the need for TM education in nursing programmes at every educational level. Technology-based ageism negatively influences nurses' WU TM, which suggests that stereotypes and prejudices about older adults' ability to use technology can be a real barrier to TM use.

Healthcare institutions therefore need to modify their educational programmes to include content that reduces TA, strengthens digital competencies and combats age-related stereotypes among nurses. This could help nurses to feel more confident using digital tools and ensure that TM supports the needs of everyone, especially older adults and people from marginalised groups.

ADDITIONAL INFORMATION AND DECLARATIONS

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Institutional Review Board Statement: This study was approved on 22 August 2023 by the National Medical Ethics Committee of the Republic of Slovenia, protocol number 0120-307/2023/3.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the research.

Statement on the Use of Artificial Intelligence Tools: The authors declare that they did not use artificial intelligence tools for text or other media generation in this article.

Data Availability: The complete dataset and codebook are available in PsychArchives at <https://doi.org/10.23668/psycharchives.14686>.

APPENDIX A – SURVEY MEASURES AND SCALES

Table A1. Measurement scales and item wording.

Construct/scale	Abbreviation	Item wording
Perceived ease of use	PEOU1	I think that I could easily learn how to use telemedicine.
	PEOU2	Telemedicine would be easy to use.
Perceived usefulness	PU1	Telemedicine would improve my performance in my job.
	PU2	The use of telemedicine would be useful in my job.
	PU3	The use of telemedicine would enhance my effectiveness in my job.
Perceived usefulness in nursing practice	PU-NP1	Telemedicine could replace part of traditional healthcare.
	PU-NP2	The use of telemedicine would shorten the waiting time for healthcare treatment.
	PU-NP3	A systematic introduction of telemedicine in nursing care makes sense.
	PU-NP4	It is important for nurses to be able to utilise telemedicine in patient care.
Perceived usefulness for patient empowerment and interaction	PU-PEI1	I believe that telemedicine empowers patients to engage in self-management.
	PU-PEI2	I believe that telemedicine improves patients' sense of safety.
	PU-PEI3	Telemedicine can facilitate the contact of healthcare personnel with patients.
	PU-PEI4	I believe that patients' awareness of taking care of their own health contributes to the success of telemedicine services.
Technology anxiety	TA1	It scares me to think I would use telemedicine.
	TA2	I feel apprehensive about using telemedicine.
Technology-based ageism	ATOAUT-10	10-item scale*
Knowledge	KNOW1	I have the knowledge necessary to use telemedicine.
	KNOW2	I have sufficient skills to use telemedicine.
Willingness to use	WU	How likely is it that you personally would like to use telemedicine in your work?

Note: * The ATOAUT-10 scale items are available in Mannheim et al. (2021).

APPENDIX B – DETAILED RESULTS OF CONFIRMATORY FACTOR ANALYSES

1) Confirmatory factor analyses of perceived usefulness constructs

Table B1. Confirmatory factor analysis of a three-factor model of latent aspects of perceived usefulness ($n = 189$).

Latent construct	Indicator	Std. factor loading	SE	R^2
PU	Telemedicine would improve my performance in my job.	0.88	0.02*	0.78
PU	The use of telemedicine would be useful in my job.	0.91	0.02*	0.83
PU	The use of telemedicine would enhance my effectiveness in my job.	0.90	0.02*	0.81
PU-NP	Telemedicine could replace part of traditional healthcare.	0.77	0.03*	0.59
PU-NP	The use of telemedicine would shorten the waiting time for healthcare treatment.	0.70	0.04*	0.49
PU-NP	A systematic introduction of telemedicine in nursing care makes sense.	0.89	0.02*	0.79
PU-NP	It is important for nurses to be able to utilise telemedicine in patient care.	0.80	0.03*	0.64
PU-PEI	I believe that telemedicine empowers patients to engage in self-management.	0.91	0.02*	0.83

Latent construct	Indicator	Std. factor loading	SE	R ²
PU-PEI	I believe that telemedicine improves patients' sense of safety.	0.80	0.03*	0.63
PU-PEI	Telemedicine can facilitate the contact of healthcare personnel with patients.	0.77	0.03*	0.60
PU-PEI	I believe that patients' awareness of taking care of their own health contributes to the success of telemedicine services.	0.82	0.03*	0.67

Note: PU: perceived usefulness (original Technology Acceptance Model); PU-NP: perceived usefulness in nursing practice; PU-PEI: perceived usefulness for patient empowerment and interaction; SE: standard error; R²: squared multiple correlations; * $p < 0.01$

Table B2. Confirmatory factor analysis of a two-factor model of latent aspects of perceived usefulness ($n = 189$).

Latent construct	Indicator	Std. factor loading	SE	R ²
PU/PU-NP	Telemedicine would improve my performance in my job.	0.88	0.02*	0.77
PU/PU-NP	The use of telemedicine would be useful in my job.	0.90	0.02*	0.81
PU/PU-NP	The use of telemedicine would enhance my effectiveness in my job.	0.89	0.02*	0.79
PU/PU-NP	Telemedicine could replace part of traditional healthcare.	0.77	0.03*	0.59
PU/PU-NP	The use of telemedicine would shorten the waiting time for healthcare treatment.	0.70	0.04*	0.49
PU/PU-NP	A systematic introduction of telemedicine in nursing care makes sense.	0.88	0.02*	0.77
PU/PU-NP	It is important for nurses to be able to utilise telemedicine in patient care.	0.79	0.03*	0.63
PU-PEI	I believe that telemedicine empowers patients to engage in self-management.	0.90	0.02*	0.82
PU-PEI	I believe that telemedicine improves patients' sense of safety.	0.80	0.03*	0.64
PU-PEI	Telemedicine can facilitate the contact of healthcare personnel with patients.	0.78	0.03*	0.60
PU-PEI	I believe that patients' awareness of taking care of their own health contributes to the success of telemedicine services.	0.82	0.03*	0.68

Notes: PU/PU-NP: combined highly correlated constructs of perceived usefulness (original Technology Acceptance Model) and domain-specific perceived usefulness for nursing practice; PU-PEI: perceived usefulness for patient empowerment and interaction; SE: standard error; R²: squared multiple correlations; * $p < 0.01$

Table B3: Comparison of confirmatory factor analysis model fit statistics between three- and two-factor models ($n = 189$).

	Three-factor model	Two-factor model
$\chi^2(df)$	62.01(41)	89.25(43)
p	0.02	<0.01
RMSEA	0.05	0.08
AIC	4312.08	4335.32
BIC	4428.78	4445.45
CFI	0.99	0.97
TLI	0.98	0.97
SRMR	0.02	0.03

Notes: $\chi^{2(df)}$: Chi-square test with degrees of freedom; p : p -value; RMSEA: Root Mean Square Error of Approximation; AIC: Akaike Information Criterion, BIC: Bayesian Information Criterion; CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; SRMR: Standardized Root Mean Square Residual

2) Confirmatory factor analysis of models based on the Technology Acceptance Model with different perceived usefulness constructs

Table B4: Confirmatory factor analysis of a model based on the Technology Acceptance Model with the original perceived usefulness construct ($n = 194$).

Latent construct	Indicator	Std. factor loading	SE	R ²
TA	It scares me to think I would use telemedicine.	0.70	0.07*	0.50
TA	I feel apprehensive about using telemedicine.	0.82	0.08*	0.68
PU	Telemedicine would improve my performance in my job.	0.88	0.02*	0.77
PU	The use of telemedicine would be useful in my job.	0.93	0.02*	0.86
PU	The use of telemedicine would enhance my effectiveness in my job.	0.91	0.02*	0.82
PEOU	I think that I could easily learn how to use telemedicine.	0.80	0.05*	0.64
PEOU	Telemedicine would be easy to use.	0.91	0.05*	0.82

Notes: PEOU: perceived ease of use; PU: perceived usefulness (Technology Acceptance Model); TA: technology anxiety; SE: standard error; R²: squared multiple correlations; * $p < 0.01$; Model fit statistics: $\chi^2(11) = 23.50$, $p = 0.02$, RMSEA = 0.08, CFI = 0.98, TLI = 0.97, SRMR = 0.03

Table B5. Confirmatory factor analysis of a model based on the Technology Acceptance Model using alternative domain-specific constructs of perceived usefulness ($n = 188$).

Latent construct	Indicator	Std. factor loading	SE	R ²
TA	It scares me to think I would use telemedicine.	0.67	0.07*	0.45
TA	I feel apprehensive about using telemedicine.	0.86	0.07*	0.74
PU-NP	Telemedicine could replace part of traditional healthcare.	0.75	0.04*	0.56
PU-NP	The use of telemedicine would shorten the waiting time for healthcare treatment.	0.67	0.04*	0.45
PU-NP	A systematic introduction of telemedicine in nursing care makes sense.	0.92	0.02*	0.84
PU-NP	It is important for nurses to be able to utilise telemedicine in patient care.	0.80	0.03*	0.63
PU-PEI	I believe that telemedicine empowers patients to engage in self-management.	0.91	0.02*	0.83
PU-PEI	I believe that telemedicine improves patients' sense of safety.	0.79	0.03*	0.63
PU-PEI	Telemedicine can facilitate the contact of healthcare personnel with patients.	0.77	0.03*	0.60
PU-PEI	I believe that patients' awareness of taking care of their own health contributes to the success of telemedicine services.	0.82	0.03*	0.67
PEOU	I think that I could easily learn how to use telemedicine.	0.80	0.05*	0.63
PEOU	Telemedicine would be easy to use.	0.90	0.05*	0.81

Notes: PEOU: perceived ease of use; PU: perceived usefulness (Technology Acceptance Model); TA: technology anxiety; SE: standard error; R²: squared multiple correlations; * $p < 0.01$; Model fit statistics: $\chi^2(48) = 83.79$, $p < 0.01$, RMSEA = 0.06, CFI = 0.97, TLI = 0.96, SRMR = 0.05

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