

Insufficient Technological Integration in Home-Based Nursing Care

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Abstract

There is increasing call of the need in home-based healthcare yet there is a lack in the incorporation of technology to enhance nursing in the homes. With an aging population, an increase in chronic diseases, homecare becomes an important part of a healthcare system. Nevertheless, low utilization of digital health tools, remote monitoring systems, electronic health records in home-nursing hinders efficiency, continuity of care, and patient safety. The paper aims to identify the technological gaps in home nursing, difficulties associated with the adoption of supportive technologies, and the following positive outcomes of a digital transformation process in the healthcare system on the care provider side and a patient. It is important to close this digital gap in a bid to provide high-quality and cost-effective patient-centred homecare services.

Keywords: Homecare Nursing, Health Technology, Digital Health, Remote Monitoring, Telehealth, Nursing Informatics, Patient-Centered Care, Health System Integration, Elderly Care, Healthcare Innovation.

1.Introduction

The modern day health sphere has experienced a revolution like no other following the upsurge of technology and the need to provide patient centered care in a non-institutional way. The situation with home-based healthcare delivery is nowadays regarded as one of the most important aspects of contemporary medical services provision in the background of changes in demographics and the rising number of people with chronic conditions and changing preferences in the area determining their preference of being provided with care in a highly familiar environment. Such a paradigm shift implies that there is an essential necessity to look into every detail of how the technological innovations should be used in residential care facilities and how to overcome the multifaceted challenges that hinder the effective realization of such enhancements(1). The implication of the meeting of healthcare technology and home-based care is similar to a complex ecosystem, as clinical efficacy, user acceptance, economic viability, and social factors are all joining to build the success or failure of any technological intervention. As opposed to hospital-based settings in which the use of technology is supported by controlled standardized surroundings and a technical support fellowship that has fully established technical assistance and infrastructure, home-based care has special problems such as variety in environmental settings, range in user technical literacy, limited immediate access to technical support and the need to have additional solutions that may accommodate specific patient situations and preferences. Moreover, the stakeholder system of home-based care is much more versatile, as it takes into consideration not only healthcare providers and their patients but also family caregivers, support networks, provided by the community, technology vendors, insurance providers, and regulatory authorities, all with different points of view, needs and limitations that can affect the decision-making process regarding technology adoption. Those theoretical contributions that help interpret how technology are important to be accepted in healthcare settings have changed a lot, and nowadays the Unified Theory of Acceptance and Use of Technology is a framework that throws much light on what is witnessed in the realm of psychology and sociology of an organizational setting which throws even more light on how technology are used and accepted within the present user and his or her intentions. Yet, it is important to apply these frameworks to the home-based healthcare settings given that various aspects of residential and institutional healthcare provision have significant differences (e.g. many care-giving relationships in residential settings are informal; the level of healthcare literacy among users varies; care is provided in a very broad range of socioeconomic contexts). Presently, research has come to the realization that effective implementation of technology in home-based healthcare needs a multi faceted approach; besides taking into consideration the technical specifications and the clinical efficacy of technological applications, it has to consider usability, acceptability, affordability and sustainability of the applications within the contexts of individual patients and their support systems.

2. Digital Health Transformation and their Social Outcomes

The conceptual landscape within which healthcare services have been formulated, administered and measured has drastically changed with the digital health revolution providing limitless potential to improve the quality, accessibility and efficiency of care provision as well as introducing an innovative set of challenges in terms of implementation, uptake and long-term sustainability. This shift goes far beyond mere digitization of the current healthcare operations to include the inauguration of fundamentally new means of care delivery that involves utilization of technologies like artificial intelligence, machine learning, Internet of Things gadgets, mobile health apps, telemedicine, and enhanced monitoring systems to offer personalized, intelligent, and uninterrupted healthcare service. Societal implications of such digital transformation are most significant in the situation of home-based healthcare where the technological solution can aid in resolutions of situations in which it is necessary to resolve issues of shortage of health care workforce, barrier to care access resulting due to geographic restrictions and the resultant rise in demand of care services due to the resultant demographic changes(2). Nonetheless, these gains can only be achieved once mind is paid to the digital divide that exists across various segments of the population and, among others, age, socioeconomic status, level of education, and geographic location affect the individual capacity to access, comprehend, and make optimum use of digital health technologies. The COVID-19 pandemic has become a driving force introducing increased use of digital health solutions, as it has demonstrated the possible positive and negative outcomes of the use of the technology to provide healthcare delivery and emphasized the paramount necessity to make sure that technological solutions are designed and utilized to foster rather than perpetuate healthcare disparities. Studies have shown that multi-stakeholder approach to the digital health transformation involving the patients, healthcare service providers, technology developers, policymakers, community organizations to work together addressing their needs, coming up with fixed solutions, and implementing flexible systems that could meet the diverse needs and preferences of various groups of users is a successful way of transforming digital health. Introducing digital health technologies into the scope of home-based care also poses relevant questions regarding the privacy, security, and ownership of the data, the necessity of well-protected regulatory frameworks that could guarantee the safety and efficiency of technology application, as well as facilitate innovativeness and access. Moreover, the economics of digital health innovation in home-based care are multidimensional and not easy to predict since they pivot on such factors as the cost of initial investment, continuous costs of maintenance and support, a possible reduction of spending due to the increased efficiency and decreased readmission rates, and the allocation of costs and benefits among various stakeholders that may range in section as patients, healthcare providers, insurance companies, and the society in general.

3. The Adaptation and Technology Integration Challenges of Healthcare Professionals

Effective technology adoption in home-based healthcare provision is based, essentially, on readiness and ability of healthcare professionals to streamline their patterns of practice, skill set, and professional identity to accept the new technological tools and routines without compromising the quality and humaneness of the process work and relationship with patients that is essential to the practice of effective health care. Researchers found that technology adoption issues experienced by professionals in home-based setting are distinctive and cannot be compared to those professionals in institutional healthcare setting including having to trouble shoot technical problems by themselves, adjusting to different environments and patient situations at home and being able to uphold professional standards despite sometimes using unfamiliar or unreliable technology platforms(3). The implications to professional development of technology integration in home-based care are tremendous, as complexes of new skill sets and knowledge areas emerge that healthcare workers must learn within, the traditional clinical skills and knowledge sets must be maintained and even improved, and the new complexes must be integrated with the traditional complexes in terms of capability. Complex of new competences emerges that healthcare workers are to gain and integrate with traditional ones in reading remote monitoring, communicating virtually, having digital literacy, applying technology to patient education and digital literacy, being able to interpret remote monitoring closely to traditional clinical skills and knowledge set. A study has regularly also indicated resistance to the adoption of the healthcare professionals as a major challenge to a successful implementation and this adoption mostly increases when the Technology is dealt over health professionals due to worries about the job security, the feeling of threat to the professional autonomy, doubtful outcome of the technology, and fear of the technical incompetence. But research has also shown that with proper training, education and continued guidance and the ability to have a say in the selection and implementation of the technology, healthcare professionals can be potent

agents of technology innovation and the overriding factor towards successful adoption both at organizational and patient level. Technology implementation in home-based care involves much more than merely allowing the professionals to become users and the role that the healthcare professionals will play in that implementation will encompass the roles of educators of their patients on the context in which the technology will be used, advocates of the technology they are asked to use, troubleshooters, and relationship brokers between the patients and the technology support system and that needs a complete paradigm of professional development that will apply not only to the technical procedures but also the communications and relationship-building effectiveness that will involve patients in adopting their own technology enhancement profiles as well(4). Not to mention, introducing technology in home-based healthcare practice raise some critical concerns relating to professional responsibility, sector of professional practice as well as upholding professional standards in technology-mediated care relationships making continuous communication among the healthcare professionals, the regulatory bodies, and technology developers an essential concern in terms of formulating proper policies and regulations safeguarding not only the providers, but also the patients whilst also contributing to innovation and prospective better results in terms of care.

4. Research design and methodological framework

The extensive research on healthcare technology adoption trends in residential care settings also required a sound methodological framework capable of adequately recording the complexity of user acceptance processes and at the same time analyzing the mix and heterogeneous features and conditions of participants in the home-based healthcare delivery systems. A cross-sectional survey research design that relied on prior theoretical literature focused on explaining the study was used to understand the particular question underlying the current study regarding the unique opportunities and challenges of residential healthcare settings. The cross-sectional survey research design adapted and extended the Unified Theory of Acceptance and Use of Technology in explaining the study. It is this methodological choice that was made due to the demonstrated effectiveness of this methodology in research on technology adoption, which is adopted in different healthcare settings, meanwhile, being as aware of the importance of adapting the work in question to consider the peculiarities of the home-based care environments such as the inability to rely on providing care in a formal setting, variable technological literacy among the participants involved, and diverse socioeconomic and cultural backgrounds of providing care in question. Development of survey tool was commensurate with literature review, expert consultation, and pilot testing processes and was undertaken using the following strategies: literature review, expert consultation, and pilot testing(5). The researchers applied the iterative design process where a number of instrument refinement cycles were conducted to address the feedback of subject matter experts, potential participants as well as the specialists in technology implementation so as to combine both theoretical rigor and practical applicability and design user-friendly nature of the final questionnaire. Respect specific focus was paid to the cultural and linguistic adaptation of measurement items to be relevant to the Finnish context of healthcare and conceptually equivalent to the internationally passed instruments, that implies that especially thorough demand translation and back-translation phases have to be conducted by the members of the research team who are fluent in both languages used and knowledgeable in both healthcare domains and survey methodology. The methodological paradigm also took into consideration ethical aspects of conducting research, such as consistent informed consent process, confidentiality considerations of the participating patient as well as voluntary research participation measures ensuring satisfactory meeting of standards mandated by the institutional review board regulations and the existing guidelines defined by the medical community on ethical research practices in healthcare institutions.

4.1 The Process of Recruitment and Sampling of the participants

The strategy of recruiting participants was to obtain a representative and diverse group of people with interest in different aspects of delivery of home-based healthcare, practicing healthcare professional, healthcare students, and other stakeholders who have significant roles in an implementation and usage of healthcare technologies in the residential care setting. Recruitment activities were logically coupled with the WelTech project educational events, which offered an obvious chance to reach the population that actively pursued the opportunity to learn more about existing welfare technologies and the opportunities to use them in the practice or student life and, hence, guaranteed that the respondents to the survey had actual exposure to the kind of technologies and implementation challenges that became the objects of the research investigation. The sampling strategy used involved the purposive sampling method and a certain degree of convenience sampling due to the feasibility of carrying out

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research within the framework of constant educational and professional development and trying to provide enough representation of the main demographic and professional groups, which can directly or indirectly determine the patterns of technology implementation and the attitude to it. Certain recruitment rules were put in effect to make sure that participants were qualified enough to share some information regarding healthcare technologies so that they could add value to the answers to survey questions, and to meet the different levels of technicality and experience in implementation so that all kinds of perspectives and experiences could be captured to address all the research questions(6). The recruitment was accomplished in the collaboration with educational institutions, healthcare and professional development program, where potential participants were identified and approached using a variety of communications channels (through direct invitation, professional networks and organizational relationships) to secure the highest potential participation rates and provide the statistical analysis with sufficiently large sample size to the analysis. Special consideration was given to ensuring proportional representation among main demographic factors such as gender, age, professional field, and the degree of the experience in using healthcare technologies in that these factors could considerably affect the attitude and behavior toward the use of technology and thus required a proper representation in the research sample. Flexible participation options were also considered in the recruitment strategy to facilitate participation of potential participants in the data collection process by offering several data collection sessions and alternative participation modalities that would allow to mitigate the potential barriers to a contribution without affecting the integrity of the data collection process. Moreover, their research team carried out rigorous tracking and documentation activities to track recruitment progress, evaluate all possible sources of selective bias, and make sure that the ultimate research sample would have the profile that would allow them to refer to the specified analytical methods and generalizability goals of the research study.

4.2 Instrument Development and Processes of Data Collection

The processes of data collection were methodically developed to achieve standard administration of the survey instrument along with consideration of practical circumstances of conducting studies in the educational and professional development setting and participant having different schedules, commitment levels, and levels of research participation familiarity. The lengthy process of establishing the survey instrument entailed substantial adaptation and editing of already established items in questionnaires with validated technology acceptance research, which was based on the pioneer research conducted by Venkatesh and coauthors with careful implementations of required adjustments to fit the context within which healthcare technology adoption takes place within residential care settings(7).concluding the construction of the questionnaire, several methods of measurement were integrated, such as Likert-scale questions to assess attitudinal constructs, items to measure behavioral frequency, and questions to capture demographics as the characteristics of the participants that may affect technology adoptions behavior which may become significant control variables in the upcoming piece of analyses. Operations of each theoretical construct identified in the UTAUT model were operationalized by using a multi-item measurement scale that would allow capturing each concept dimensions and provide adequate redundancy in a scale-building and validation process with special reference to such words as the clarity and unambivalent nature of wording and its appropriateness to the educational and professional background of the various individuals included in the target population. The research team used rigorous procedures of pre-testing such as cognitive interviewing representative sample of respondents to identify possible areas of confusion or misinterpretation in survey questions, pilot testing studies to examine length of questionnaire and time to complete the questionnaire, and expert review mechanisms to get verification in relation to theoretical and methodological soundness of instrument design and administration. Data collection sessions were topically planned to coincide with educational activities of WelTech project in order to make the data collection activities as convenient to participants as possible, and at the same time, make the unique controlled setting in which the surveys were delivered, through which the participants could be provided with assistance in case of need, and the quality of the collected data could be controlled and maintained. The administration protocol detailed standard process of filling out a survey, clear description of the research purpose and participation requirements and consistent procedures to deal with the questions or concerns raised by the participants in the course of the data collection process. During the data collection period quality control measures were put into place such as monitoring response patterns to detect the possible data quality problems, systematic monitoring of completion rates and patterns of missing data, and regular evaluation of participant feedback in order to detect what changes to the procedure may be made to enhance data quality or participant experience. The research group also implemented definite guidelines that ensured data safety and confidentiality safeguard such as secure data storage procedures (where the completed

questionnaire was stored) and de-identification procedures to ensure research participant privacy and restricted access procedures that only individuals that had been vested with the duty of research personnel could access responses to the questionnaire given and their identifying information.

4.3 Statistical analysis and Analysis Framework

The analytical strategy used was the more advanced methodology of statistical analysis that was particularly aimed to analyze the hypothesized relationships put forward in the UTAUT model and take into consideration the multifarious nature of the technology adoption behaviours in the domain of medical services and the possible effect of different demographic and contextual variables that may moderate or mediate these associations(8). The selection of structural equation modeling methods as the adopted analytic framework was based on a finding that it allows analyzing multiple relationships between latent constructs simultaneously, controls the measurement error, and allows a complete evaluation of the model fit and theoretical validity. This analytical plan involved not only confirmatory factor analysis operations to verify the measurement model and check the reliability and validity of construct measurements but also structural equation modeling aimed to test the hypothesized links between theoretical constructs and demonstrate the overall explanatory capability of the used UTAUT model in the case of technology adoption in residential care facilities. Preliminary analyses involved descriptive statistics to describe the study sample and help determine the quality of data, reliability analyses involving Cronbach alpha coefficient in assessing the internal consistency of the measures on the scales, and exploratory analyses to determine possible outliers, missing data characteristics and distribution problems to affect the procedures of analysis in further tasks. Structural equation modeling technique used the maximum likelihood estimation procedures that were included in AMOS software and degrees of fits were judged by several fit tests, such as root mean square error of approximation, comparative fit index, normed fit index, and incremental fit index to get a general evaluation of the extent to which the theoretical model fitted the observed data patterns. Review of possible moderator effects of demographic variables such as gender, age, professional background and experience on technology adoption; the analysis also examined the theoretical constructs relationships having taken cognizance of the fact that these variables could greatly affect either the strength or direction of relationship in the theorised technology adoptions and hence should be thoroughly examined. Other types of analytical processes involved sensitivity analysis to determine the sensitivity of results to other model specifications or analytical assumptions and post-hoc analysis to probe unexpected effects or relationships that were aroused during the normal processes of analyses and could possibly offer extra information with respect to the technology adoption process in a healthcare setting.

5.Results

5.1 Sample and Demographic Characteristics of the Participants

The broad-based attempts to gather data facilitated the receipt of answers by 124 respondents participating in the study of 2019 at a varied cross-section of the healthcare world, students and participants of the residential care technology implementation projects. The demographic sample was largely female participants with 84 percent of total number of participants being women with 102 participants as compared to 16 percent of male participants with 20 representing the number of respondents with the same gender factor being applied in many professions including the healthcare and social service professions where 80 percent of the workforce participants are of the women gender category traditionally(9). The analysis of professional background showed great diversity of respondents (61 subjects; 50 percent) identified as social and healthcare professionals actively involved in direct patient care or the delivery of healthcare with other professional backgrounds participating in implementation of healthcare technologies also identified (24 subjects; 19 percent), 22 subjects (18 percent) as students studying in the healthcare-related field and 17 subjects (13 percent) with intangible professional backgrounds that could not be categorized according to the established professional background classification system. The analysis of age distribution showed quite a balanced pattern of representation in various generational cohorts, with one-third of the respondents (n=44) being aged under 27 years, including the category of emerging professionals and students who do not necessarily follow the same technological comfort levels and adoption trends as practitioners who have more experience. Almost one third of respondents (n=36) were in the age bracket of 28-37 years or even a mid career professional who has usually had his substantial professional experience and yet was reasonably well up in the technological changes. The third of participants (n=44) were over 38 years old, which reflects the older professionals whose patterns of digital adoption can be affected by professional practices preferences and the degree of being used to the digital innovations. Such age distribution was a good chance to study the technological

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acquisition patterns among generation and to see how the demographic factors could temper the links between theoretical constructs defined in the UTAUT model. The geographic representation contained in the Finnish context of the healthcare system mainly limited the scope of the study to the Nordic frameworks of the healthcare delivery system although may be duly and fully applicable to the rest of the developed countries with a similar structure to the healthcare system in these countries. Since this sample was associated with formal education and training programs, it was likely that the participants had a recent exposure to current concepts and strategies related to healthcare technologies as well as associated implementation programs, which should increase the relevance of responses in addition to suggesting the presence of a selection effect; this effect could potentially reduce the generaliness of the sample reducing the applicability to other healthcare workers not engaged in formal training programs on the topic of technologies.

5.2 Structural Equation Modeling, Results and Construct Validation

The structural equation modeling analysis also carried out thorough data screening of theoretical association presented in the adapted UTAUT model and revealed good expression to the overall model through statistical indices that surpassed standard parameters of satisfactory model fit to be implemented in the field of social science research. In particular, the root mean square error of approximation was found to be 0.023, significantly less than the acceptable value of 0.08 and implying that the model seemed to fit the data very well, whereas the comparative fit index was equal to 0.996, which is significantly higher than the accepted minimum of 0.95 and implies that the relationships identified in the data were adequately captured by the proposed model. Other fit indices also supported the adequacy of the model, as the normed fit index was 0.942 and the incremental fit index 0.996 which was above the required minimum standard of 0.90 and supported the validity of the theoretical framework in the research practice in this instance(10). The construct reliability analysis showed that the main theoretical elements achieved high internal consistency values, with Cronbach alpha coefficients showing acceptable to excellent level of reliability of performance expectancy (alpha = 0.942), effort expectancy (alpha = 0.888), facilitating conditions (alpha = 0.805), and behavioral intention (alpha = 0.665), the results of which indicated that the elements of measurement captured the main targeted theoretical constructs and promised adequate levels of reliability to use statistically meaningful analyses. Although the behavioral intention scale scored the least on reliability coefficient, users gave valid indications concerning their intents on using at least the technology in their healthcare facilities under exploratory studies and thus the scale was considered a good guide on the aforementioned concept. Factor loading analysis evidenced the strong relationships between individual measurement items with their prospective theoretical constructs with standardized factor loading values being in general above the threshold value of 0.70, evidence of convergent validity in measurement model. The discriminant validity check also established that the constructs of the theory were adequately differentiated among themselves and had conceptually relevant relationships which supported the tested role of the theory in making distinctions among various elements of the technology acceptance and technology use processes. Results based on a path-coefficient analysis indicated that a considerable number of significant relationships existed among many of the key theoretical constructs with the performance expectancy having the greatest effect on the behavioral intention (standardized coefficient = 0.284) and this was followed by effort expectancy (standardized coefficient = 0.339), facilitating conditions exerted an overall effect on behavioral intention as well as use behavior as indicated by a significant effect in both directions. Interestingly, social influence did not show the existence of important relationships with other constructs in the model, implying that peer and supervisory influences are not of utmost importance in the specified setting as distinguished to individual perceptions of the technology utility and ease of use.

5.3 Hypothesis Testing Results and Statistical Significance

The results of the research qualification of research hypotheses showed a varied support to the theoretical relations of which the original UTAUT model assumed that 3 out of 5 hypotheses were statistically supported, whereas the remaining two hypotheses did not obtain the statistical significance in the specific research setting. Hypothesis 1 suggesting that performance expectancy has a positive impact on the willingness of the homecare users to adopt welfare technology was substantially confirmed since the path coefficient was statistically significant and the standardized estimate revealed the difference to be effectively positive proving a significant positive association between the perceived importance of the technology and adopting intentions. Such a conclusion is consistent with the large body of past studies showing that healthcare providers and other stakeholders are more willing to adopt technological innovations when they believe that it brings obvious advantages in terms of performance at work, patient care, or/and efficiency of service delivery. Hypothesis 2 proposing that effort expectancy has a positive impact on the intention of the users to use welfare technology in residential care situations also showed a strong

empirical evidence proving that the perceived ease of use is an important determinant in the decision to use technology by healthcare professionals and other people involved in the process of delivering care at home. This association is a key to justifying the significance of ease designing and intense training programs in promoting technology implementation plans. The third hypothesis, which suggests that social influence has a favorable relationship with the intension of the users to adopt welfare technology did not reach the statistically significant conclusion of this analysis affirming that the peer pressure, supervisory pressure, as well as social norms, might not play a significant role in making the decisions concerning the use of technology or failing in this case than making a decision based on the personal perceptions of the technology utility and usability. The finding can be viewed in terms of relatively high independence in decision-making in the home-based care outlets or the particularities of the study population, which consisted of a large number of participants actively involved in technology training programmes and potentially exposed to education materials rather than to social pressures. Hypothesis 4, which indicated that facilitating conditions have a positive impact on the way people would actually use them, was empirically confirmed, which proved that infrastructure support, technical assistance and organizational resources are significant in determining whether intended technology adoption is actually in practice settings and the ability of the same to be maintained. It is a reason why overall implementation support that does not end with training but continues the involvement of technical support and organizational support to project technology integration initiative is critical. Hypothesis 5 suggesting a positive effect of behavioral intentions on actual use behaviors was cast to the surprise of findings as it did not prove to be statistically significant meaning that the stated intentions of adopting technology and actual implementation practices do not correlate which implies that there are very heavy implementation barriers or contextual factors that inhibit the transformation of positive attitudes to real practices of using technology.

6. Conclusion and Future work

The multifaceted study of the topic of healthcare technology adoption in residential care settings has presented important lessons both supporting and refuting the theoretical constructs already in place as well as helping to guide the practical use of real-life adoption strategies. The confirmatory corroboration of the adapted Unified Theory of Acceptance and Use of Technology model proves that it remains relevant and applicable in the situation of healthcare delivery at home, with noticeable limitations and situational rules that should identify a residential care scenario in contrast to a typical institutional context of healthcare application. The fact that the effect of performance expectancy has been empirically proven as a first-order parameter of the adoption intention goes to confirm the core message of illustrating a clear advantage of adoption, a reality that can be profitably outlined and tangibly proven to healthcare professionals and other actors that are supposed to absorb such new technologies in their practice processes. This observation indicates that effective technology implementation projects should focus on building and communicating value propositions that are interesting enough stating how technology innovations will play out to deliver better results in the context of job performance, patient outcomes, or efficiency in service deliveries such that the end users can easily see how those efforts are or going to be significant and positive. This strong correlation between effort expectancy and behavioral intention further verifies that the perception of ease of use is still a determinant in the acceptance or refusal of technological use and the user-centered design concept should still be at the forefront of technology selection and the insightfulness of training programs to minimize the mental and physical cost of learning and using the new technological system. Yet, the fact that social influence did not reach statistical significance in the given context of the research is a significant deviation of the patterns established in prior UTAUT studies and implies that a different system of social forces may be expected to guide the process of technology appropriation in a home-based and domestic healthcare ecosystem than in an institutional healthcare environment. This finding can be attributed to more independent, individualized process of decision-making in residential care facility where healthcare professionals operate most of the time in isolation and they may not receive direct supervisory guidance or peer influence unlike those working in hospital or clinic. However, an alternative explanation of this finding may be that individuals who may undergo formal training in technology adoption tend to form their attitude towards adoption basically on educational materials and individual appraisal as opposed to social factors, which points out to the potential success that structured learning-affected systems have to achieve adoption choices that have an evidence-based foundation. The second challenge of the unwarranted disagreement between behavioral intent and actual use behavior is the most important theoretical implication of the current study because it indicates that existing technology acceptance theories do not provide

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sufficient oversight activities and scope limitations that constitute the realities of technology implementation in the healthcare facility. This intention-behavior gap is a hint at the existence of meaningful moderates or moderating variables that lie between positive attitude towards the technology and practical implementation practice and may include organizational and resource limitations, technical and administrative problems or miscellaneous priorities that do not allow positive intentions to translate into long-term change in behavior.

The study results can be turned into action by various stakeholders, including the managers of healthcare institutions, creators of technological solutions, and policymakers, wanting to make technology implementations attempts at home-based care settings more successful using evidence-based methods of influencing adoption decisions and implementation outcomes, based on which the research relied. The fact that performance expectancy emerged as particularly high calling attraction intentionity underlines the pivotal necessity to develop a complex set of business cases and demonstrations of value that would allow stating clearly what particular benefit the proposed technology can resolve to the healthcare professional, hence cannot be reduced to the generic promises about the technological functionality but should be translated into a set of concrete and measurable improvements in performance that are related directly to the working experiences and professional aspirations of target users. This observation implies that high successful implementation initiatives efforts must be put in pilot activation plus assessment functions, which produce trustworthy evidence of good technology outcomes, engagement of end users in assessment cycles and offering chances of peer-to-peer exchange of triumph tales, and recommendations that can cement confidence and interest in comprehensive application of technology. The implications of the major importance of the construct of effort expectancy in influencing adoption intentions point to the fact that user experience design and training program design remains an important part of successful implementation strategies that cannot be ignored by technology developers, who thus still must focus strongly on usability testing and iterative design processes that will make technical solutions that meet the needs of the individuals, the workflow characteristics and the technical capacity of the healthcare professionals working in the residential care facilities. The full-fledged training and support services offered as part of implementation programmes should not just cover orientation sessions, but also aid in sustaining abilities and confidence in the use of new technologies by offering continuous coaching and problem-solving fixes, as well as the possibility of refresher training that will enable the targeted user to become more competent and confident in the use of new technology to them. The absence of the considerable social influence effects implies that implementation strategies might require to pay even more attention to individual persuasion and education and less commonly be merely based on the management instruction or social pressure dynamics to facilitate adoption, implying that effective programs should focus on establishing effective individual motivators and seeking to show personal gains but not be primarily oriented to the organizational and social objectives. The high correlation with that between facilitating conditions and actual use behavior highlights the extremely crucial role of an extensive application of infrastructure resources, technical services, and organizational support to the technology implementation operations which means that the health care institutions must make sufficient investments in providing supporting systems which are capable of resolving technical challenges, periodic support and upgrades, and can present the stakeholders with the capacity to integrate the new technologies into their practice schedules effectively. The mismatch between intentions and actual behavior in use implies that implementation strategies need to go beyond assistance with the initial adoption choices to the more complex factors that impact long term consistency of use over time which can involve issues related with the integration of use into workflow, other priorities, resource availability, and a change in user needs which over time can negatively impact on technology utilization patterns.

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Conflicts of interest

The authors have no conflicts of interest to declare

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