

Influence of Digital Health Technologies among Healthcare Providers on Long-term Care Services Implementation for Elderly with Disabilities

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Abstract

The traditional paradigm of home care in China is not up to the challenges posed by the country's increasing population's advancing age and lack of available resources. Digital monitoring technology solutions are thought to be advantageous for managing caregivers' workloads while also improving resident safety and care quality in assisted living facilities. To effectively provide the best possible services, teamwork is crucial in New Hampshire. Due to several issues such as staffing shortages, rising resident expectations, and increased demands, NH are consequently embracing the use of Knowledge Management (KM) activities more and more to facilitate knowledge development, storage, transfer, and application. In China, the lack of an established system for caring for the elderly is having a significant impact on society as a whole, making it imperative to establish one. The researcher examined the real impacts of their quality management system and KM efforts on service quality, as well as the KM adjustments made by two China state NH that adopted the E-Qalin management of quality model, in the qualitative research. Additionally, the researchers looked at the approaches used by two China private NH that address service quality from a knowledge management standpoint but have not implemented a certified management of quality program. There were eighty nursing professionals in the sample. Teamwork is crucial in every NH included in this study, and each participant in the researcher's poll is a member of a team. In this work, the researchers used linear regression to analyse connections between individual variables. Between the development, transmission, and application of knowledge in the state of New Hampshire regardless of the E-Qalin certificate, the researchers discovered a strong and favourable correlation. The researchers found a statistically significant and favourable association between knowledge storage and service quality, but only in New Hampshire with an E-Qalin certificate. Thus, the researcher's study's findings highlight the necessity of learning more about quality control and knowledge management in the context of New Hampshire. The government, tech companies, and nursing homes need to further restructure the current system before more elderly people adopt sophisticated technology in home care settings. The study's findings, which centre on the transmission of tacit knowledge, substantially advance the field of knowledge management research in New Hampshire.

Keywords: *Digital Monitoring, E-Qalin, Technology, Nursing Homes, Linear Regression, Knowledge Creation, Quantitative Study, Lack of Staff, Teamwork.*

Introduction

Numerous advances have been made in this area along with in the research of some chronic diseases thanks to the quick development of technological and scientific knowledge, which is supporting the improvement of health. The most recent information and communication technologies can be integrated with long-term care and aging in place to help seniors age successfully and efficiently. More crucially, [1, 2], advancements in communication and information technology can help older people age in place by overcoming some of the barriers to doing so. As a result, there is a decrease in the need for labour and more funds to support caregiving initiatives.

Medical ICT typically entails using video calls to replace in-home visits with monitoring vital signs for patients experiencing chronic illnesses at home in order to understand the physiologic status. In order to help patients with persistent illnesses manage their own care, remote homecare systems can automate dispatch, monitor clinical indicators, and send out medicine reminders. This allows daily records and health education to be completed simultaneously. Information and communication technologies were used in the

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establishment of these initiatives to improve the convenience of healthcare administration [2, 3]. Moreover, numerous clinical research investigations have demonstrated that utilizing self-monitoring recordings obtained at home to detect bad clinical phenomena early on greatly lowers hospitalizations and readmission rates.

Pharmacy and Digital Health Technologies

The number of individuals worldwide suffering from chronic illnesses is rising, even though there has been tremendous progress in the development of novel treatments. Simultaneously, the advent of digital health technology has been accompanied by an increase in research highlighting the shortcomings of pharmaceutical medications and biologics in the management of long-term medical disorders [3, 4]. Among the difficulties with pharmaceutical treatments for chronic illnesses are:

- Medication non-adherence, which impacts 30–50% of those with long-term illnesses,
- communities of people with epilepsy, chronic pain, depressive disorders, and cancer who are resistant to treatment,
- negative consequences, toxicity, tolerance, mortality, and
- Medication shortages, accessibility issues, and affordability. The aforementioned issues all lead to worse outcomes for therapy and higher medical expenses.

Software is used by digital health technologies, commonly referred to as mobile healthcare or mHealth, to provide a range of clinical capabilities, such as non-pharmacological treatments for chronic illnesses. Apps for mobile devices that are intended to treat particular medical issues and have been approved by regulatory bodies are known as digital therapies (Software as Medical Devices, SaMD) [4, 5]. A growing body of research demonstrates the therapeutic effects of therapeutic video games and mobile and web-based applications for individuals with diabetes, drug abuse, anxiety, melancholy, bipolar disorder, schizophrenia, chronic pain, epileptic seizures, cardiovascular disease, and cancer [5, 6]. Digital therapies' cost-effectiveness and clinical advantages support their incorporation into healthcare.

Long-term aging health care's mechanism has been the subject of much discussion. Experts in nursing and geriatric care have conducted extensive research and proposed numerous strategies to enhance the physical and emotional well-being of the old. These strategies are combined with government social welfare programs to offer the necessary assistance. The idea of medical integrating was introduced because an increasing number of academics feel that integrated thinking is necessary to address the issue of aged care [7, 8]. This concept's fundamental idea is integration into several systems, ranging from bodily and spiritual care and concerns to avoiding illnesses, medical treatments, including follow-up maintenance.

Research on integrated health services Consider senior health care as an extensive, all-inclusive system that must be managed holistically, including everything from the treatment of illnesses to mental and physical well-being. Thus, it is necessary to develop long-term care systems for the elderly from an integrated perspective. However, [8, 9], the sustainability of the system's "funding" is an important factor to take into account because funding sources may differ. In the past, the bulk of financing for social welfare programmes came from nonprofit organisations and the government in order to circumvent the issue of benefit transfer.

According to China's seventh national statistics bulletin, the country had 190.64 million individuals 65 years of age or older by the end of 2020 (13.5% of the total population), with a 19.8% senior reliance ratio. China is one of the world's most populated countries. The increasing incidence of sickness and disability has led to a notable increase in the number of older people in China who need professional healthcare services because of a disability or semi-disability [9, 10]. A survey found that more than 76% of elderly Chinese individuals suffer from at least one chronic condition, including diabetes, hypertension, heart disease, or

respiratory issues. This is what is known as the "price of triumph" that comes with living longer. Additionally, due to the long-standing one-child policy and the cultural notion of "xiao," the majority of Chinese households today are in charge of looking after more than four older family members, such as the grandparents and parents of the spouse [10, 11]. This is a great deal more attention than what family members are able to offer. Thus, the rapidly growing need for elderly care poses a serious threat to the traditional Chinese home healthcare model, which depends on family members & community agencies to supply services.

In light of this, China has focused on combining home care, IoT, and the internet. By serving as a go-between for medical institutions, senior care facilities, and residences via smart technology, it aims to unify information amongst them. China has implemented "digital health interventions" such as shared nurses, online hospitals, or smart care service platforms to enable the aged to get professional senior care at home [11, 12]. Numerous Chinese studies, however, indicate that the quality and actual use of these services are not as high as expected [12]. Despite increased government and commercial investment, only a tiny percentage of senior citizens are long-term users of technology.

The term "nursing home" is oxymoronic; nursing homes (NH) are medical facilities furnished to occasionally resemble homes but not to resemble homes in general. The adherence to formality, the lack of personalisation, and the care routines seem institutional rather than cosy. Thus, NH aims to change the idea of long-term care while simultaneously upholding the highest standards of care by including users (residents) in the care planning process [12, 13]. In long-term care, patients are seen as partners in quality, placing them at the core of care.

In China, there is no system in place to compare or assess the quality of NH services. The management of NH takes the independent certification choice in order to improve the grade of NH services and elevate the organization's reputation in society [13]. While the quality management of E-Qalin is based on the concept of multidisciplinary teams collaborating with users, or the people of New Hampshire, the private company DEOS, which owns nine NH, evaluates its own quality using a different methodology [13, 14]. Information is therefore shared throughout all DEOS system resources and inside each home through multidisciplinary teams that are not composed of the residents. A new paradigm that centres care planning around the needs of the individual, values teamwork, encourages the sharing of organisational and individual knowledge within NH, and is in line with the long-term care paradigm that envisions and connects the integrated management of social and health care is needed to provide high-quality long-term care services.

The Impact of Managing Knowledge in Nursing Homes on Service Quality

Knowledge management is the process of acquiring, producing, sharing, and effectively using organisational knowledge. Knowledge management is a set of concepts, tools, and practices that enable people to create knowledge and make it easier for information to be shared, translated, and used in ways that add value and enhance output [14, 15]. Organizations can obtain a competitive edge by consistently and effectively using their knowledge. Everyone in the organization may access every one of the knowledge-thanks to knowledge management initiatives. Furthermore, information is now an essential component of all firms' value creation processes, serving as both a competitive advantage and a fundamental skill. The argument that knowledge Management (KM) is becoming a more crucial skill for businesses in both the public and commercial sectors is supported by the study information that is currently available.

The Generation of Knowledge in Nursing Homes & Its Impact on Service Quality

One way to conceptualize knowledge creation is as a network of various endeavours and activities that work together to produce novel concepts or goods. Individuals and groups share explicit and tacit information inside and between organizations during the knowledge generation process. Knowledge is typically created by personal experience gained from learning, communication, introspection, [15, 16], and organizational knowledge acquisition. Since knowledge production is the process that creates both social and economic value, it can be referred to as the driving force of innovations. In addition, knowledge

creation facilitates the generation of new information within businesses, [17], thereby augmenting their knowledge assets.

A variety of internal and external sources within the organization can contribute to knowledge development, which also serves as a prerequisite for the efficient application of knowledge. Its foundation in the cooperation of experts from many organizational areas that practice teamwork is another feature [18, 19]. Managers in various organizations must also comprehend the effects of knowledge creation because knowledge is crucial to the success of the organization. They must also find ways to enhance knowledge, which can be accomplished by promoting employee interaction, interpersonal interaction, and collaboration as well as asking for assistance when needed—a crucial role for teamwork [19]. In a similar spirit, mention the many research investigations that contend that the creation of knowledge has the ability to enhance organizational effectiveness and service quality.

Objectives Of the Study

- Examine how healthcare professionals that provide services such as long-term care for older people with impairments are now utilizing digital health technologies.
- Examine how healthcare professionals view the advantages of digital health technologies.
- Examine how digital health technologies affect the standard of care given to older people with disabilities.
- Provide suggestions on how digital health technology might be successfully integrated into services for long-term care for older people with disabilities.

Literature Review

(Gallistl, V., Seifert 2021) [20] Global health organizations and governments designate older persons as a "risk group" for more severe and potentially lethal SARS-CoV-2 (COVID-19) illnesses. Following a COVID-19 infection, elderly persons residing in Long-Term Care (LTC) facilities are thought to be particularly vulnerable to more severe and deadly illnesses. As a result, during the pandemic, regulations mandating LTC residents to remain indoors and keep a physical distance from others were implemented in numerous nations. But because of the restrictions, which have barred members of the family from visiting nursing facilities for a number of months, this group is more vulnerable to isolation. Researchers are concerned that these extra stringent regulations may make long-term care facility (LTC) residents feel more alone and isolated.

(Kemp, E., 2021) [21] Digital health technology has the potential to reduce health disparities in cancer care. One element that affects how effective digital health technology is for users is digital health literacy, or the "capabilities and resources needed by users to use and take advantage of digital health resources," which mixes digital literacy with health. The researchers examined issues with digital health literacy and its use in cancer treatment through stakeholder participation. A total of 51 stakeholders—consumers, healthcare workers, academics, developers, nonprofit organisations, and government and policy stakeholders—discussed the needs, facilitators, and opportunities for integrating digital health into cancer therapy in focus groups and interviews. Researchers employed framework analysis to identify topics of knowledge regarding digital health in relation to fairness and inequity.

(Wilkinson, A., 2018) [22] Millions of people with dementia who live in long-term care facilities struggle with under stimulation, anxiety, and agitation. To address these issues, new technologies are being created, such as ambient activities and serious games. Regular engagement with instrumented variants of these innovations may yield advantages for residents in long-term care facilities, as well as furnish a rich array of diverse data pertaining to the well-being of those residents over an extended period. In this research, we

propose a methodology for monitoring one's health in healthcare settings and present findings from two studies that demonstrate the non-intrusive collection of medically relevant data from hospital emergency room patients and senior citizens.

(Jiang, Y., 2022) [23] In order to address the issue of insufficient health resources and encourage older patients to actively and intelligently participate in the management of their chronic diseases, telehealth and internet-based health information offer patients greater accessibility to healthcare services as well as medical information. Qualitative research on the use of internet health resources and telemedicine for managing chronic illnesses in senior citizens is scarce. One of the most prevalent chronic illnesses affecting older persons is chronic obstructive pulmonary disease. The treatment of chronic pulmonary obstructive disorder makes extensive use of telehealth. This study set out to investigate how older individuals and healthcare professionals perceived and experienced the use of telehealth and online health resources for managing chronic conditions, namely chronic obstructive pulmonary disease.

(Senbekov, M., 2020) [24] By using digital medical technology, the public can get better flexibility and accessibility to healthcare. Data about health, illnesses, therapies, side effects, and recent developments in biomedical research are all freely accessible. These days, access to medical and diagnostic services has improved, particularly in low-income countries. However, there are still many unsolved problems regarding digital health technologies, including those pertaining to their ethical implications, safety, testing, and reliability.

(Scott, B. K., 2020) [25] The coronavirus illness of 2019 (COVID-19) has either exposed a deficiency in resources, particularly medical personnel equipped to provide prompt or intense treatment, or it has generated a public health emergency in the United States. This article discusses using digital health technologies to mitigate COVID-19. The National Emergency Tele-Critical Care Network (NETCCN), which would use digital health technology to handle disasters both now and in the future, was then proposed. Subject-matter experts from the Telemedicine or Advanced Technology Research Centre, the Society of Critical Care Medicine, and the Society of Critical Care Medicine reviewed peer-reviewed literature and science/technology news to find examples of digital health technologies that could be used to: (1) support patients while limiting the spread of COVID-19; (2) improve the skills and abilities of healthcare providers; and (3) predict or prevent future outbreaks.

(World Health Organization, 2. 2020) [26] This guideline offers information on immunization, community emergency preparedness, self-care for overall health, and shifting from an acute epidemic response to sustainable management of COVID-19 in response to the pandemic. This advice is intended for senior citizens, senior citizen caregivers, and policymakers in charge of medical and Long-Term Care (LTC) services. To improve the physical and emotional health of its inhabitants, any facility that offers care to the elderly (long-term care facilities, non-acute care hospitals, home care agencies, etc.) should use Integrated Patient Care (IPC). The general public and policymakers should work more to promote IT usage, community-based care, age-friendly surroundings, and self-care among older persons.

(Tilahun, B., 2021) [27] The coronavirus illness (COVID-19) is now spreading exponentially around the world. Different countries are presently employing various digital health technologies as different kinds of weapons in the fight against pandemics. The primary goals of this research are to assess how digital health technologies may mitigate the COVID-19 pandemic and to pinpoint any areas where the field is currently lacking in the application of these resources. We carried out a scoping review in compliance with the Joanna Briggs Institute's recommendations. Electronic databases such as Hinari, the Cochrane Library, and MEDLINE (PubMed) were used to search the studies. Furthermore, searches were conducted on Google and Google Scholar. The review covered studies that examined the use of digital health technology for COVID-19 prevention and control. The uses of digital health technologies, the regions in which they are employed, and the principal discoveries of the study were delineated by the researchers. Thematic content analysis was used to provide the study findings from the corpus of contemporary literature.

(Abbaspur-Behbahani, S., 2022) [28] The physical and emotional health of elderly individuals has been impacted by the COVID-19 pandemic. The use of ICT, particularly mobile health care (m-health), can

assist in containing the pandemic by altering the routines and lifestyles of the elderly during this crisis. The objectives of this assessment were to give a general overview of the COVID-19 pandemic's m-health services' capabilities and to pinpoint the elements that made these instruments more successful.

(Nsengiyumva, N. P., 2018) [29] One of the most important public health challenges is ensuring adherence and assistance throughout tuberculosis (TB) treatment. Treatment results could be enhanced by digital health technologies. Their potential cost and impact on the management of latent or active TB in Brazil were considered. Decision analytic models were used to simulate two adult cohorts. These cohorts comprised two groups of people who got isoniazid for latent tuberculosis infection (LTBI): 1) those who were close to someone who had active TB, and 2) people who had just obtained an LTBI diagnosis. Four digital support approaches were evaluated by the researchers: two-way Short Message Service (SMS), synchronous Video-Observed Therapy (VOT), and two different medicine monitors. Self-administered therapy and traditional directly monitored treatment were employed as comparators for active tuberculosis. The targeted outcomes included the costs (in US dollars), the number of active instances of tuberculosis, and the number of disability-adjusted life years that patients with LTBI were able to prevent.

(Yang, W., 2021) [30] From July 4–5, 2019, At King's College London in London, there was a second King's College London Symposium on Ageing & Long-term Care in China. The conference's main goal was to raise awareness of the social and health issues related to ageing and long-term care in China. Research findings from a variety of academic fields, such as public health, sociology, gerontology, demography, economics, and public policy, are included in this symposium. Twenty participants from eight different nations are attempting to determine which of China's ageing and long-term care industries are the most urgent challenges, as well as where future study should concentrate. The findings that are displayed here give an overview of the four most important research topics and reflect the opinions of some of the most eminent professionals in the area.

(Quan, N. G., 2020) [31] The purpose of this study was to evaluate the effectiveness of different lonely treatments, classify the interventions according to their kinds, and determine how beneficial these interventions were for elderly residents in long-term care (LTC) facilities during the previous ten years. Systematic review according to PRISMA standards. The search parameters were satisfied by articles from 2009 to 2019, which were retrieved from Web of Science, PsycINFO, and PubMed. The following were the requirements for inclusion: 1) A person over 65 who is the primary or secondary outcome; 2) intervention studies that compare pre- and post-trial changes with a quantitative measure; 3) English language proficiency; as well as 4) people residing in long-term care (LTC) facilities, such as assisted living, nursing homes, or hospices.

(Dorner, B., 2018) [32] The Academy of Dietetics and Nutrition holds that customized nutrition techniques can improve the nutritional status and quality of life of older persons in post-acute care, long-term care, and other settings. The Academy supports the use of registered dietitian nutritionists in interprofessional teams to assess, evaluate, and prescribe suitable dietary interventions based on the unique medical needs, preferences, and rights of each patient to make decisions about their care. Registered dietitian nutritionists are assisted by registered nutrition and dietetic technicians in implementing individualized nutrition treatment, which includes the use of least restrictive diets.

(Overdijkink, S. B., 2018) [33] Among the various applications being created with mobile health (mHealth) technology to meet both medical and personal living requirements are those connected to pregnancy. Despite the paucity of evidence, usability and efficacy are critical for successful adoption. The purpose of this study was to assess the usability, or feasibility and acceptability, of mHealth lifestyle and medical apps in supporting prenatal care in high-income nations. The app's real usage, interest, intention, and continued use, as well as users' evaluations of its appropriateness and task-completion abilities, were all factors in determining the project's feasibility. The acceptability of the programme was evaluated by examining user happiness, appreciation, and word-of-mouth referrals.

Hypothesis

H1: The quality of care provided in assisted living facilities holding an E-Qalin certificate is favourably correlated with knowledge creation.

H2: The quality of care provided in assisted living facilities bearing an E-Qalin certificate is positively correlated with knowledge storage.

H3: The quality of care provided in assisted living facilities holding an E-Qalin certificate is favourably correlated with knowledge transfer.

H4: The quality of care provided in assisted living facilities holding an E-Qalin certificate is favourably correlated with knowledge implementation.

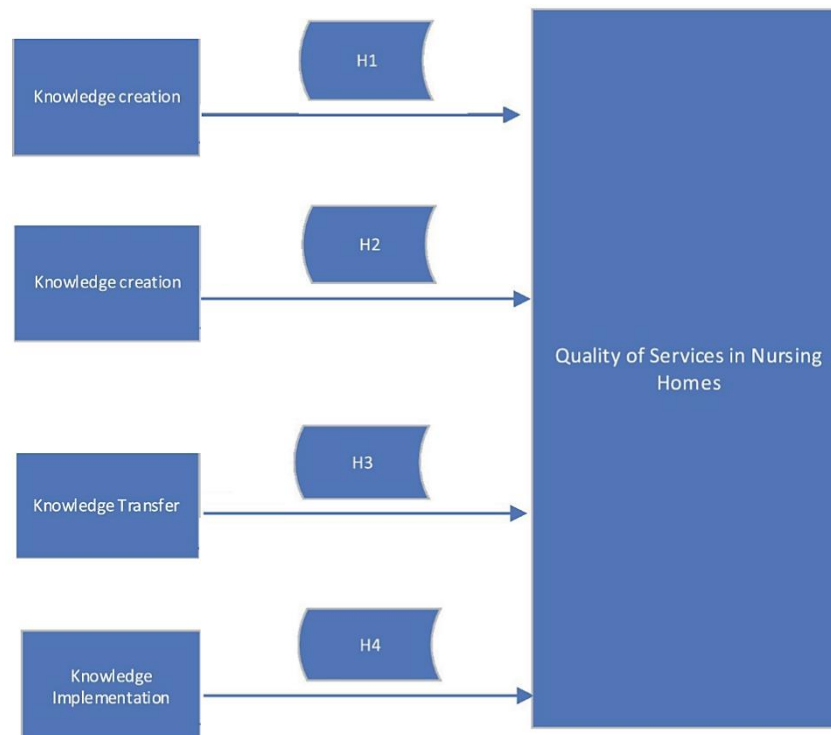


Fig. 1 Framework for Research.

Methodology

Data Collection

The researchers agreed to use an in-person as well as online questionnaire that was modified in order to collect primary information from the respondents. In 2022, a restricted sample of four Chinese national hospitals participated in this investigation. Out of them, two are owned by the state and possess the E-Qalin certificate, whilst the remaining two are private hospitals that employ eighty people each and have their own quality control system. To illuminate some of the most notable features of the sample, it was found that 76.6% of respondents were female, 16.9% were male, and 6.5% chose not to disclose their gender. The age range of 20 to 29 accounts for the greatest percentage of replies (36.4%). The second highest proportion of research participants (28.6%) are between the ages of 40 and 49. Sixty-nine percent of individuals who answered this poll were high school graduates. Additionally, the respondents had, on average, worked in New Hampshire for about eight years. Table One.

Table 1 Representative Demographics

Respondent's characteristics		Frequency (N=80)
Gender	Man	17.8%
	Woman	79.8%
	No answer	6.8%
Age	<20	2.8%
	20-29	36.8%
	30-39	14.8%
	40-49	29.5%
	50-59	12.7%
	>60	5.8%
Education	Primary School	6.9%
	High School	68.9%
	Post-secondary Programs	7.9%
	First China degree	7.9%
	Master of science	8.9%
	PhD in China	1.8%

Measures

The researchers used predefined criteria to choose measurement scales that would allow them to obtain a deeper understanding of individual constructs. These criteria included: (a) frequency of citation in recently published research papers in relevant scientific journals; (b) usage in contemporary literature; and (c) well-established and frequent use by well-known authors of the researched topics. Understanding respondents' agreement on the presence of knowledge generation, storage, transfer, and implementation—as well as how these aspects impact the quality of services that NH really offers—was the main goal of this study. For this reason, a five-point Likert scale was selected, with one representing "strongly disagree" and five representing "complete agreement."

- *Knowledge Creation:* The four-item scale ($\alpha = 0.86$) that is used to gauge the development of knowledge was employed.
- *Knowledge Storage:* The researchers employed the 7-item scale ($\alpha = 0.90$) to assess the storage of knowledge.
- *Knowledge Transfer:* Using the 8-item scale ($\alpha = 0.93$), researchers measured the transfer of knowledge.
- *Knowledge Implementation:* The 4-item scale ($\alpha = 0.80$) from was employed to assess the application of knowledge.
- *Quality of Services in Nursing Homes:* The 20-item scale ($\alpha = 0.97$), which is used to gauge the quality of services, was employed.

Result

Using linear regression, relationships between the individual variables were examined. Table 2's results indicate that, on average, respondents give the highest ratings for knowledge development (3.80) and the

quality of care in nursing homes (3.80), with knowledge storage (3.66) coming in second. The average rating for knowledge implementation (3.46) and transfer (3.47) was marginally lower. Table 2 displays the correlation coefficients, which vary from 0.42 to 0.81 and indicate moderately favourable, extremely positive, & very strongly positive relationships between the variables that were measured.

Variable	Mean	Sd.	1	2	3	4
Knowledge Creation	3.89	0.54				
Knowledge Storage	3.89	0.89	0.54**			
Knowledge Transfer	3.48	0.52	0.53**	0.18**		
Knowledge implementation	3.82	0.68	0.28**	0.64**	0.07**	
Quality of Service Nursing Home	3.82	0.79	0.64**	0.91**	0.54**	0.187* *

** $p < 0.01$.

Through the use of linear regression analysis, the researchers investigated the direct correlations between the variables. Table 3 presents the findings.

Variables	β	Hypothesis
KC-QS	0.69**	H1: Supported
KS-QS	0.48**	H2: Supported
KT-QS	0.54**	H3: Supported
KI_QS	0.98**	H4: Supported

* $p < 0.05$; ** $p < 0.01$.

Discussion

In terms of long-term healthcare, developing an ICT-based healthcare system would likely be challenging and take some time. This system has to be supported by medical professionals (i.e., carers), community leaders, residents, and their families. As a result, in order to develop an ICT that is both convenient and efficient, carers' demands must be considered in addition to those of residents and their families [34, 35]. Based on the PZB model theory, a user and patient approval survey was used to assess how well an ICT system integration at a childcare facility worked. All of the occupants are in sub-healthy circumstances because the equipment is being utilised in a nursery. The majority of old people can walk, albeit slowly, and are in generally good physical health.

Factors Influencing the Direct Efficacy of Smart Technologies Experience

Enhancing the home care atmosphere for the elderly is not the same as the functionalist objective of smart technology buyers and designers [35]. As end consumers, the elderly have a more direct, pragmatic, and easier-going attitude toward technological advances [36]. They believe that technology has obvious advantages over conventional approaches and can directly address some unmet requirements.

Elements Influencing the Long-Term Effectiveness of Smart Technology Experience

Unlike previous studies that claimed the digital divide and private ambitions affected seniors' use of technology, the researchers show that various modern technologies are presently within the grasp of what elders can use, or at least are willing to utilise. This is partially caused by the decreasing obstacles to technology use, [36, 37], but it's also a result of older adults' recent and explosive embrace of information technologies like social media and e-government.

This study shows how cooperation, the quality process, and knowledge management are interconnected. Comprehending the quality services provided in long-term care requires workers to acquire new knowledge

and work together towards ongoing quality improvement. This investigation revealed a significant distinction: the work procedures for E-Qalins's quality management and knowledge management are built on a cross-disciplinary collaboration which takes place continuously and always includes the representatives of the inhabitants [37]. As a result, relationships among coworkers are much improved, as is knowledge of the tasks performed by different departments and a shared emphasis on ensuring the residents' well-being.

The researchers looked at the clear connection between NH's service quality and knowledge production. The quality of services and knowledge generation, as well as the quality of products with and without an E-Qalins accreditation, were found to be significantly and positively correlated.

Conclusion

In the context of a quality management system, where cooperation is essential to the process of ongoing growth & service implementation in New Hampshire, this article has examined the influence of knowledge management (KM) in NH. The numerous caring tasks in New Hampshire must be carried out by personnel who have received the necessary training and possess the necessary knowledge in order to give the residents a high standard of living. Teamwork is viewed as a knowledge-integrated system that may enhance information transmission, storage, application of current knowledge, and development of new knowledge. Continuous quality improvement and person-centered treatment have improved people's quality of life in New Hampshire. While nursing homes must adjust to shifting societal mores, giving residents tailored care is always their top priority. To sum up, the implementation of knowledge management (KM) in New Hampshire (NH) has the potential to enable carers to make decisions based on values, protocols, and personalised care plans in addition to intuition. Collaboration is emphasised to enable the sharing of knowledge and the generation of new information.

References

- Huang, Q.; Li, Y.; Wu, X.; Ge, S.; Qu, Z.; Wang, A.; Tang, X. The willingness and influencing factors to choose smart senior care among old adults in China. *BMC Geriatr.* 2022, 22, 967.
- Chen, H.L.; Hagedorn, A.; An, N. The development of smart eldercare in China. *Lancet Reg. Health West. Pac.* 2022, 35, 100547.
- Jiang, Y.; Sun, P.; Chen, Z.; Guo, J.; Wang, S.; Liu, F.; Li, J. Patients' and healthcare providers' perceptions and experiences of telehealth use and online health information use in chronic disease management for older patients with chronic obstructive pulmonary disease: A qualitative study. *BMC Geriatr.* 2022, 22, 9.
- Zhao, B.; Zhang, X.; Huang, R.; Yi, M.; Dong, X.; Li, Z. Barriers to accessing internet-based home Care for Older Patients: A qualitative study. *BMC Geriatr.* 2021, 21, 565.
- Wang, X.H.; Xiang, Y.H. Practice and reflection on the development of smart elderly care. *Soc. Sci. Guangxi* 2019, 35, 81–88.
- Siegel, C.; Dornier, T.E. Information technologies for active and assisted living—Influences to the quality of life of an ageing society. *Int. J. Med. Inform.* 2017, 100, 32–45.
- Kang, H.J.; Han, J.; Kwon, G.H. Determining the intellectual structure and academic trends of smart home health care research: Coword and topic analyses. *J. Med. Internet Res.* 2021, 23, e19625.
- Evans, J.; Papadopoulos, A.; Silvers, C.T.; Charness, N.; Boot, W.R.; Schlachta-Fairchild, L.; Crump, C.; Martinez, M.; Ent, C.B. Remote health monitoring for older adults and those with heart failure: Adherence and system usability. *Telemed. J. e-Health* 2016, 22, 480–488.
- Maeder, A.J.; Williams, P.A.H. Health smart homes: New challenges. *Stud. Health Technol. Inform.* 2017, 245, 166–169.
- Marston, H.R.; Genoe, R.; Freeman, S.; Kulczycki, C.; Musselwhite, C. Older adults' perceptions of ICT: Main findings from the technology in later life (TILL) study. In *Healthcare; Multidisciplinary Digital Publishing Institute: Basel, Switzerland*, 2019; Volume 7, p. 86.
- Choi, H.K.; Lee, S.H. Trends and Effectiveness of ICT Interventions for the Elderly to Reduce Loneliness: A Systematic Review. *Healthcare* 2021, 9, 293.
- Fares, N.; Sherratt, R.S.; Elhajj, I.H. Directing and Orienting ICT Healthcare Solutions to Address the Needs of the Aging Population. *Healthcare* 2021, 9, 147.
- Chang, H.T.; Lai, H.Y.; Hwang, I.H.; Ho, M.M.; Hwang, S.J. Home healthcare services in Taiwan: A nationwide study among the older population. *BMC Health Serv. Res.* 2010, 10, 274.
- Kato, G.; Tamiya, N.; Kashiwagi, M.; Sato, M.; Takahashi, H. Relationship between home care service use and changes in the care needs level of Japanese elderly. *BMC Geriatr.* 2009, 9, 58.
- Ahmadvand A, Gatchel R, Brownstein J, Nissen L. The biopsychosocial-digital approach to health and disease: call for a paradigm expansion. *J Med Internet Res.* (2018) 20:e189.
- Bloem BR, Rompen L, Vries NM, Klink A, Munneke M, Jeurissen P. ParkinsonNet: a low-cost health care innovation with a systems approach from the Netherlands. *Health Aff.* (2017) 36:1987–96.

- Chen Y, Abel KT, Janecek JT, Chen Y, Zheng K, Cramer SC. Home-based technologies for stroke rehabilitation: a systematic review. *Int J Med Inform.* (2019) 123:11–22.
- Motl RW, Backus D, Neal WN, Cutter G, Palmer L, McBurney R, et al. Rationale and design of the STEP for MS Trial: comparative effectiveness of Supervised versus Telerehabilitation Exercise Programs for Multiple Sclerosis. *Contemp Clin Trials.* (2019) 81:110–22.
- Kahraman T, Savci S, Ozdogar AT, Gedik Z, Idiman E. Physical, cognitive and psychosocial effects of telerehabilitation-based motor imagery training in people with multiple sclerosis: a randomized controlled pilot trial. *J Telemed Telecare.* (2019).
- Gallistl, V., Seifert, A., & Kolland, F. (2021). COVID-19 as a “Digital Push?” Research experiences from long-term care and recommendations for the post-pandemic era. *Frontiers in Public Health*, 9, 660064.
- Kemp, E., Trigg, J., Beatty, L., Christensen, C., Dhillon, H. M., Maeder, A., ... & Koczwara, B. (2021). Health literacy, digital health literacy and the implementation of digital health technologies in cancer care: the need for a strategic approach. *Health Promotion Journal of Australia*, 32, 104–114.
- Wilkinson, A., Tong, T., Zare, A., Kanik, M., & Chignell, M. (2018). Monitoring health status in long term care through the use of ambient technologies and serious games. *IEEE journal of biomedical and health informatics*, 22(6), 1807–1813.
- Jiang, Y., Sun, P., Chen, Z., Guo, J., Wang, S., Liu, F., & Li, J. (2022). Patients’ and healthcare providers’ perceptions and experiences of telehealth use and online health information use in chronic disease management for older patients with chronic obstructive pulmonary disease: a qualitative study. *BMC geriatrics*, 22, 1–16.
- Senbekov, M., Saliev, T., Bukeyeva, Z., Almabayeva, A., Zhanaliyeva, M., Aitenova, N., ... & Fakhradiyev, I. (2020). The recent progress and applications of digital technologies in healthcare: a review. *International journal of telemedicine and applications*, 2020.
- Scott, B. K., Miller, G. T., Fonda, S. J., Yeaw, R. E., Gaudaen, J. C., Pavliscsak, H. H., ... & Pamplin, J. C. (2020). Advanced digital health technologies for COVID-19 and future emergencies. *Telemedicine and e-Health*, 26(10), 1226–1233.
- World Health Organization, 2. (2020). Guidance on COVID-19 for the care of older people and people living in long-term care facilities, other non-acute care facilities and home care (No. WPR/DSE/2020/015). WHO Regional Office for the Western Pacific.
- Tilahun, B., Gashu, K. D., Mekonnen, Z. A., Endehabtu, B. F., & Angaw, D. A. (2021). Mapping the role of digital health technologies in prevention and control of COVID-19 pandemic: review of the literature. *Yearbook of medical informatics*, 30(01), 026–037.
- Abbaspur-Behbahani, S., Monaghesh, E., Hajizadeh, A., & Fehrest, S. (2022). Application of mobile health to support the elderly during the COVID-19 outbreak: A systematic review. *Health policy and technology*, 11(1), 100595.
- Nsengiyumva, N. P., Mappin-Kasirer, B., Oxlade, O., Bastos, M., Trajman, A., Falzon, D., & Schwartzman, K. (2018). Evaluating the potential costs and impact of digital health technologies for tuberculosis treatment support. *European Respiratory Journal*, 52(5).
- Yang, W., Wu, B., Tan, S. Y., Li, B., Lou, V. W., Chen, Z. ... & Wang, Y. (2021). Understanding health and social challenges for aging and long-term care in China. *Research on Aging*, 43(3–4), 127–135.
- Quan, N. G., Lohman, M. C., Resciniti, N. V., & Friedman, D. B. (2020). A systematic review of interventions for loneliness among older adults living in long-term care facilities. *Aging & mental health*, 24(12), 1945–1955.
- Dorner, B., & Friedrich, E. K. (2018). Position of the Academy of Nutrition and Dietetics: individualized nutrition approaches for older adults: long-term care, post-acute care, and other settings. *Journal of the Academy of Nutrition and Dietetics*, 118(4), 724–735.
- Overdijkink, S. B., Velu, A. V., Rosman, A. N., Van Beukering, M. D., Kok, M., & Steegers-Theunissen, R. P. (2018). The usability and effectiveness of mobile health technology-based lifestyle and medical intervention apps supporting health care during pregnancy: systematic review. *JMIR mHealth and uHealth*, 6(4), e8834.
- Anderson, B. E., and Bliven, K. C. H. (2017). The use of breathing exercises in the treatment of chronic, nonspecific low back pain. *J. Sport Rehabil.* 26 (5), 452–458.
- Armitage, L. C., Kassavou, A., and Sutton, S. (2020). Do mobile device apps designed to support medication adherence demonstrate efficacy? A systematic review of randomised controlled trials, with meta-analysis. *BMJ Open* 10 (1), e032045.
- Arute, F., Arya, K., Babbush, R., Bacon, D., Bardin, J. C., Barends, R., et al. (2019). Quantum supremacy using a programmable superconducting processor. *Nature* 574 (7779), 505–510.
- Assaraf, Y. G., Brozovic, A., Gonçalves, A. C., Jurkovicova, D., Linē, A., Machuqueiro, M., et al. (2019). The multi-factorial nature of clinical multidrug resistance in cancer. *Drug Resist. Updates* 46, 100645.