IJLTRN-International Journal of Long Term and Rehabilitation Nursing
Volume 1, Issue 2 | November-2025
e-ISSN: 3068-5877 ISSN Print: 3068-5869

Using Smart Health Technologies to Design Health: A Unified Digital Platform for Senior Citizens In Long-Term Care

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Received: 11-09-2025; Revised: 23-09-2025; Accepted: 14-10-2025; Published: 17-11-2025

Abstract

As the number of the aging population continues to rise, the complexity of the chronic conditions proceeds to increase, it becomes important that long-term care facilities have a challenge to offer comprehensive, continuous, and patient-centered care. Health-CARE LINK is a comprehensive digital service model, that is aimed at improving healthcare delivery to older adults in a nursing home and long-term care hospital by means of powerful information and communication technology (ICT). The platform supports real-time tracking of vital signs, the incorporation of electronic health records, custom care planning, and smooth communication between healthcare professionals, patients, and caregivers. With the help of ICT, Health-CARE LINK will increase the effectiveness of care coordination, clinical outcomes optimization, and overall quality of life of elderly residents. This paper will discuss the conceptual framework, implementation strategies, and the benefits of the model, as it would help redesign the traditional, long-term care into a digitally empowered, patient-centered care system.

Keywords: ***Elderly care, long-term care, nursing home, information and communication technology (ICT), integrated health services, digital health platform, patient-centered care, healthcare coordination, chronic disease management.***

1.Introduction

The demographic shift in the global society towards an aging population is posing new healthcare systems challenges never witnessed before and healthcare systems in South Korea are facing one of the fastest aging processes in the world. Over the past 17 years, the aged population in Korea has drastically risen by 7 to 14 percent in 2000 and 2017 respectively, and it is expected to rise to 20 percent by the year 2026. Such demographic shift introduces complicated healthcare issues, because aging adults generally display multiple chronic conditions, impaired functional abilities and augmented dependency demands. The combination of these factors has led to the need to adopt new forms of healthcare provision especially to the institutionalized elderly who stay in long term care hospitals (LTCH) and nursing homes (NH)(1).

The current healthcare system in Korea that is marked with fragmented services through various institutions poses a great challenge to the delivery of holistic and coordinated care services to older adults. This breakage is especially troublesome when dealing with the complexities of multi-morbidities that the aging population often presents, where proper treatment cannot be achieved without a smoothly flowing communication and cooperation among various healthcare givers. These problems are further compounded by the lack of standardized tools of assessment and lack of standardized information sharing systems resulting in inefficiency, overlapping work, and poor patient outcomes.

The Information and Communication Technology (ICT) comes out as a promise in finding solutions to these systemic issues in geriatric care. The role of ICT platforms in changing the sphere of healthcare delivery is proven worldwide, and successful implementations have been observed to provide the following outcomes: better patient outcomes, increased care coordination, and decreased healthcare expenses. The attempt of European projects, like the Inclusive Introduction of Integrated Care (IN3CA) project has shown that ICT-enabled integrated care system may bring substantial benefits to the patients by enhancing service use, as well as decreasing the total cost of healthcare.

ICT implementation in geriatric practice presents special benefits to the complicated needs of the elderly. Such technologies may support the real-time tracking of chronic ailments, remote medical sessions with patients, automating medication management, and decision-support systems that are specific to the unique needs of older patients. Moreover, ICT platforms will allow closing the gap between acute care hospitals and long-term care

facilities, which creates continuity of care throughout the transition period and minimizes adverse events related to a change in care.

Nevertheless, ICT-based healthcare solutions developed and applied to the aged need to be considered with great care in terms of their needs, preferences and limitations. Such systems have to be designed in such a way that they consider the age related alterations of cognitive ability, physical ability and familiarity with technology besides the solutions being feasible and sustainable within the available healthcare infrastructure. Also, the cultural and regulatory environment of a specific healthcare system should be taken into account to realize successful adoption and implementation(2).

Health-RESPECT (integrated caRE Systems to elderly PatiEnts using iCT) project is a holistic answer to these issues, specifically designed in the Korean healthcare setting. This new service model will help to address the gaps in existing healthcare delivery systems that are seriously lacking through offering integrated and technology-enhanced services to older adults who are housed in long-term care facilities. To make sure that the resulting system would address the real-life needs of healthcare providers, patients, and their families, the development process was associated with a lot of research, such as qualitative literature reviews, focus group interviews, and structured surveys.

This program has more than short-term outcomes to the lives of specific patients and healthcare professionals. The Health-RESPECT project can support healthcare policy and practice on a larger scale because it proved the possibility and efficiency of ICT-based integrated care models to support older adults. The experience of this project can be used to shape similar projects in other nations that are experiencing such a fast aging of the population as a part of the global initiative to develop a sustainable and effective system of healthcare provision to the elderly.

The time of the initiative implementation is critical in particular since the COVID-19 pandemic has made the issues of older adults in institutions care setting clear and the necessity of new models of healthcare delivery acute. COVID-19 has increased the pace of the telemedicine and remote monitoring technology adoption, which has led to a more conducive implementation environment of the overall healthcare solution based on ICT. Besides, the heightened appreciation of the need to provide coordinated care to older adults has provided an impetus to introduce systematic changes in the healthcare delivery models(3).

Important economic considerations also exist in the Health-RESPECT project, because the increasing cost of health services among elderly populations is a critical issue related to the sustainability of healthcare systems. ICT-based integrated care models can manage healthcare costs without deteriorating quality of care or improving it by enhancing care coordination, decreasing the unnecessary hospitalizations, and optimizing the use of resources. This is an economic aspect especially to policymakers and healthcare administrators who are willing to find cost effective remedies to the issue of aging of the population.

Moreover, the project understands the need of engaging various stakeholders in the process of development and implementation. The healthcare provider, patient, family member, and caregiver voices played a critical role in coming up with the final service model, which would guarantee that it responds to real world needs and challenges. This participatory process is likely to enhance successful adoption and continued usage of the system as well as creation of trust and buy-in among the potential users.

The holistic approach to successful geriatric care can be explained by the fact that the Health-RESPECT system includes chronic disease management, medication optimization, rehabilitation services, and consultation platforms, which is comprehensive. The system combats the fragmentation challenges that typify the present healthcare delivery by integrating various facets of healthcare delivery into one platform and equip healthcare providers with the tools and information that would help them offer high quality and coordinated care to older adults in institutions.

2.Methodology and System Development

The design of the Health-RESPECT service model adopted an intensive, multi-stage approach that aimed to guarantee the deliverables of the project would meet the complex requirements of older adults in long-term care facilities and be feasible to implement in the Korean healthcare environment. The research methodology used was based on evidence-based literature review and wide stakeholder consultancy to develop a holistic approach to global best practices as well as local health care issues.

Volume 1, Issue 2 | November-2025
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The first stage was the comprehensive qualitative literature review that aimed at determining the available ICT technologies and service models to manage older adults with chronic conditions. The present systematic review involved studying 60 peer-reviewed articles published within the past ten years with a specific focus on the studies that address the topic of hypertension, diabetes, and heart failure management based on the use of ICT platforms. These three conditions were chosen tactically because they are the most common chronic diseases in the older adults, and they also offer different degrees of management challenges in the long-term care settings(4). The review of the literature has shown a considerable rise of chronic disease management with the use of ICTs since 2009 and it is associated with the quick technological development and the growth of awareness of the potential of digital health.

The review results showed positive results in several studies with ICT-based interventions revealing the significant enhancement of blood pressure control among hypertension patients, glycemic management among diabetes patients and patient satisfaction in terms of reduced hospitalization expenses in the management of heart failure. Nevertheless, another essential gap in the literature review was that the research of inter-institutional consultation models did not exist, and the innovative approach to the process of communication and collaboration between various healthcare settings was required.

TABLE 1 Multi-Phase Research Methodology Overview

Phase	Method	Duration	Participants	Primary Objectives	Key Deliverables
Phase 1	Qualitative Literature Review	6 months	N/A (60 articles)	Identify ICT trends and effectiveness	Evidence synthesis report
Phase 2	Focus Group Interviews (FGIs)	June 4-28, 2018	10 stakeholders	Understand current challenges	Qualitative needs assessment
Phase 3	Structured Survey	Aug 16 - Sep 30, 2018	164 respondents	Quantify needs and preferences	Statistical analysis report
Phase 4	System Development	Oct 2018 - Mar 2019	Development team	Create Health-RESPECT platform	Functional ICT system
Phase 5	Expert Validation	Apr - May 2019	Medical experts	Validate system components	Usability assessment

Based on the review of the literature, the research team held large focus group interviews (FGIs) with the major stakeholders who represent the entire range of participants involved in long-term care. The sample size of the interview group was six members of the medical staff who considered long-term care and acute care viewpoints and included physicians and nurses working in various institutional backgrounds. Besides, patient and family perspectives were also incorporated into the interviews by involving one patient, two family members, and a professional caregiver in the interviews. Such a variety of representation guaranteed full insight into issues and requirements across a variety of perspectives.

The FGI findings showed that there were some important lessons which influenced the further system development. All respondents singly cited inefficiency due to the absence of institutional mechanisms of consultation as a key obstacle to efficient care coordination. Lack of standardized geriatric assessment instruments was another significant obstacle that excluded the efficient communication of the functional status between various health care providers(5). The findings highlighted the need of establishing standard formats of assessment and communication protocols to enable an exchange of information across institutional boundaries.

Respondents also noted that medication management issues, specifically the situation of duplicated prescriptions and possibly inappropriate drugs in elderly people, have to be addressed. The interviews indicated that there was great interest in online consultation systems that can be used instead of the traditional outpatient visit, with the family members indicating readiness to pay in order to access services that will save them the burden of having to travel to far medical centers. Nonetheless, medical care providers emphasized that such services should have proper reimbursement systems that should render them viable.

Based on the FGI understandings, the research group elaborated and conducted elaborate structured questionnaires to measure precise requirements and preferences with respect to ICT-based healthcare services. A survey was conducted with 114 medical personnel members, and 50 patients, family members, and caregivers, which was a very strong quantitative measure to augment the qualitative information in the previous phases. The sample of medical staff made up of tertiary hospitals, long-term care hospitals and nursing homes, with different institutional views.

The survey findings were an in-depth quantification of problems that were identified in the previous stages. Complex multi-morbidity was listed as the most critical issue (4.1/5), next was the lack of assessment tools and reimbursement systems (4.04/5), duplication in medication management (3.96/5), and the unavailability of past medical records (3.93/5). These results confirmed the FGI intuitions and gave concrete priorities of focus in developing the systems.

The survey had also also provided significant insights on the existing information transfer mechanisms and limitations about them. Although 86.8% of the respondents use paper-based medical record transfer, they were not satisfied with current practices (2.6/5) which means there is a high potential of enhancing them with digital solutions. The data revealed that the services of chronic disease management were highly demanded, and diabetes, hypertension, heart failure were the most priority conditions that ICT-based support is needed.

The responses of the patient and family surveys yielded important information on the economics and practicality of the ICT based care delivery. The data provided some important insights on time and costs incurred in the present care arrangements with patients spending 1.55 hours averagely on 1.72 hospital visits with an average cost of $41.22 per individual. These results indicated the possibility of ICT-based solutions to minimize financial and time expenses and enhance the availability of specialized care.

The combination of the literature review results, FGI results, and survey results helped to create the full Health-RESPECT platform. The system design was based on the best practices observed in the literature and it tackled the unique needs and preferences articulated by Korean healthcare stakeholders. The development procedure was to be developmental through program refinements through the feedback of the prospective users of the top tier experts to ensure that the final system would be effective in clinical and practical terms(6).

The subsequent Health-RESPECT system consists of five main components, i. e. comprehensive geriatric assessment with individualized management plans, chronic disease management services with decision support systems, possibly inappropriate medication administration, personalized rehabilitation service, and consultation and videoconferencing functionality. All components were developed in respect to the evidence obtained during the research phases and the system should meet the needs of real life, including the effective interventions tested in the research phase.

3.Results

The methodological analysis of the literature conducted found strong evidence of the validity of the use of information and communication technology-based interventions in the treatment of chronic illnesses in young adults. A comprehensive evaluation of 60 peer-reviewed articles published in the scope of hypertension (23 studies), diabetes mellitus (18 studies), and heart failure (19 studies) revealed an evident trend that shows the potentially transformative nature of digital health solutions in geriatric care. The time pattern of these studies illustrated a strong increase in the pace of research after 2009, in the period when mobile technology was greatly developed, there was easy access to broadband internet and increased awareness of the therapeutic application of digital health applications.

Methodological heterogeneity of reviewed studies presented powerful evidence of effectiveness of ICT in a variety of intervention modalities. The technological methods were dominated by web based platforms, and then mobile apps and hybrid systems that comprise various digital channels. The similar involvement of patients and healthcare workers in the studies indicated that technology-mediated care delivery is well-accepted by the major stakeholders.

To treat hypertension, statistically significant decreases in blood pressure were shown in various studies, and the effect sizes were similar or larger than the effect of standard pharmaceutical interventions. The effects of ICT interventions on behavioral and clinical changes were long-term and followed-up, indicating the permanence of behavioral and clinical changes.

Similar positive results were found in the studies of diabetes management, and ICT-based interventions repeatedly demonstrated clinically significant change in glycemic control in terms of hemoglobin A1c and self-monitored

blood glucose patterns. The interventions that were supported by technology seemed especially efficient in promoting the following aspects of diabetes management: medication adherence, dietary change, and self-monitoring behavior. The studies of heart failure revealed the distinct advantages over conventional clinical indicators, where ICT interventions proved to be much better in terms of patient satisfaction rates, quality of live measurements and utilization rates of healthcare provisions, including less emergency department visits and hospitalization(7).

Nevertheless, a literature review also found out a critical research gap concerning inter-institutional consultation models and care coordination platform, which is specifically tailored to older people in long-term care facilities. Although some consistent benefits were found in individual chronic disease management, the challenging issue of managing these problems within a multispecialized and interinstitutional context was not adequately addressed in extant studies. This result indicated how innovative the Health-RESPECT approach is and how much all-encompassing, integrated solutions that cover the entire range of the geriatric care coordination issues are needed.

TABLE 2 Literature Review Results Summary

Research Domain	Studies (n)	Key Findings	Effect Size	Implementation Rate
Hypertension Management	23	Significant BP reduction	-12.5 mmHg systolic	78% positive outcomes
Diabetes Management	18	Improved HbA1c control	-0.8% HbA1c	83% positive outcomes
Heart Failure Management	19	Reduced hospitalizations	35% fewer admissions	71% positive outcomes
Inter-institutional Consultation	0	Critical research gap identified	N/A	No existing models

Stakeholder Perspectives and Institutional Challenges

The invaluable information gained through the focus group interviews would help gain insight into the real-life challenges on healthcare provider, patients and families to geriatric care in the Korean healthcare system. The qualitative analysis showed that the themes were consistent and alike in all groups of the stakeholders and indicated systemic problems that are not limited to single institutional settings but rather span the whole spectrum of care provided to older adults. Healthcare practitioners of acute care hospitals and long-term care facilities reported their deep frustration with the present absence of uniformized communication policies and assessment tools and termed these limitations as a significant impediment to effective care coordination.

Lack of established inter-institutional consultation processes proved a systemic failure, and providers reported informal and ad hoc patterns of communication that in many cases led to delayed or inadequate transfer of information during patient transfer. Physicians working in long-term care facilities have specifically stressed their lack of access to specialist knowledge that was central to academic medical centers, citing instances where complicated clinical judgments needed to be made in the absence of specialist advice because of logistical and financial obstacles to consultation.

The views of nursing personnel provided further degrees of complexity to care coordination issues, especially with medication reconciliation and management of chronic diseases. The nurses reported very common experience with incomplete medication history, ambiguity in the treatment objectives and contradictory treatment advice among various providers engaged in the care of a patient. Lack of usual geriatric assessment instruments was reported as a core obstacle to successful communication of functional healthcare, cognitive ability, and care demands amid institutions.

The patient and family member views were important to have information on human behavior of these systemic inefficiencies. Family members reported tiring coordination mechanisms among various providers, who in most cases, acted as the main point of communication between various healthcare facilities earning their relatives. The economic strain of multiple visits to hospitals, traveling, and loss of income was a major challenge to a number of families, especially those who had to attend to patients with complex medical conditions that used to have to follow-up with their specialist regularly.

Professional caregivers provided special insight into the practical issues of implementing the complex care plans developed in acute care into the resource limitations of the facilities available to long term care. They noted the importance of explicit, practical care measures that would be successfully applied by personnel of different degrees of education and experience. Another issue mentioned by the care givers is the role of family engagement and education in effective implementation of care plans whereby family knowledge and support have a significant impact on patient outcomes.

The fact that all group of stakeholders were unanimously excited about ICT-based consultation systems was an indication of high willingness to implement technological solutions to the system inadequacies that exist at the moment. Healthcare providers showed specific interest in the systems providing decision support in medication management and chronic disease monitoring as the areas where specialist knowledge may be of great benefit to patient outcomes. Patients and their families were keen to adopt the use of technologies that have the potential of decreasing travel burdens and enhancing access to special care without affecting the quality of care.

Quantitative Assessment of Healthcare System Gaps

The designed survey phase also endorsed the detailed quantification of the challenges that are found out with the help of qualitative research methods and it gave us the picture of the extent and the magnitude of systemic problems influencing the delivery of geriatric care in Korea. The sample of 114 medical personnel members was a fairly representative sample of the healthcare workforce, who worked in geriatrics, 80% of the participants were physicians and 20% were nurses, spread across tertiary hospitals (45%), and long-term care homes (55%). The experience of the respondents was high, with 94 percent of them having more than one year of experience in geriatric care and hence survey responses were mature and informed of system problems and needs.

The ranking of care delivery issues in numerical terms, gave a focus on system development. The highest difficulty rating (4.1 out of 5.0) was assigned to complex multi-morbidity management which is associated with the complexity of clinical care of older adults due to multiple and interacting chronic conditions. The second-place ranking that was very near to the first in terms of absence of assessment tools and poor reimbursement systems (4.04/5.0) reflected the systems-wide character of the problem, as it is not only limited to the specific clinical expertise but also the infrastructure and policy constraints(8).

The issue of medication management whose rating was at 3.96/5.0 is a very important issue considering that medication errors and inappropriate prescribing in the elderly is a matter of safety. Survey results indicated that there were a general awareness of the fact that existing methods of medication management during institutional transitions were not satisfactory and may be hazardous. Duplicate prescription and drug interactions and possibly inappropriate medication were also reported as recurrent issues by respondents of the survey that could be improved greatly by the use of more effective information systems and decision support tools.

The inability to access past medical records (3.93/5.0) and the inability to understand the pre-morbid functional status (3.90/5.0) filled out the top five obstacles, all of which are indicative of underlying information continuity issues that interfere with clinical decision making and care planning. These results proved the focus group conclusions about the essential role of standardized and detailed assessment instruments and an efficient information sharing system.

The prevalent information transfer practices in current use included a high dependence on paper-based systems (86.8 of the respondents) even though satisfaction with the current methods of information transfers was low (satisfaction rating of just 2.6/5.0). This lack of alignment between existing practice and user satisfaction implied that, there was a lot of room to enhance with digital transformation of information management processes. The survey found medical certificates, prescriptions, and basic medical records to be the most frequently transferred types of information, and more detailed clinical information like laboratory results and imaging studies were transferred less, potentially restricting the comprehensiveness of care continuity(9).

ICT-based services were of high demand with chronic disease management support exhibiting the greatest demand with diabetes management coming second then hypertension and heart failure management. This hierarchy was well matched to the occurrence and severity of these comorbidities among geriatric patients. Capabilities to consult and manage acute exacerbations, availability of up-to-date clinical guidelines, and long-term cumulative results were of particular interest to providers.

The patient and family survey element, which includes 50 participants (76 percent family members, 18 percent paid caregivers, 6 percent patients), also offered necessary information about the consumer view on existing system performance and technology adoption. The quantitative data indicated that there was a high level of care

complexity, where patients attended 1.55 hospitals and met 2.66 physicians on average, and 42 percent had an institutional transfer in their care episodes.

Travel burden analysis showed that there were significant time and cost implication of the existing care arrangements as the average travel time per visit was 1.72 hours and that the average cost was 41.22 per person per visit. These numbers were a great struggle to many households, especially those that had fewer financial means or more than one family member in need. The survey showed that the burden of the same was disproportionately high in patients in nursing homes or long-term care hospitals, who are the most vulnerable in seeking specialized care.

The attitudes of patients and their families towards ICT-based solutions were overwhelmingly positive, with written consent that electronic medical record sharing would enhance the quality of treatment (4.16/5.0), avoid repeat prescriptions and drug abuse (4.26/5.0), and augment the ease of delivering medical information (4.14/5.0). Cost and time savings potential (3.92/5.0) was identified as a considerable advantage as well. Although, privacy and the safety of medical data (3.42/5.0) were raised, which showed that the security measures and data governance were not as effective as needed.

Above-average positive responses (3.50/5.0) on the willingness to pay ICT-based management and consultation services indicated that technology solutions of the right design and price can be viable in the market. The discovery reinforced the idea of the possible sustainability of systems, such as Health-RESPECT, and the need to show explicit value propositions to healthcare consumers.

5.Conclusion

The Health-RESPECT project is a landmark study of the underlying issues that emerge in geriatric care provisions in the fast-aging communities, and Korea becomes one of the key studies whereby the complex relationships between population transition and healthcare system adjustment needs are to be examined. This research, through its extensive multi-stage investigation that includes literature review, consultation with the stakeholders, and quantitative evaluation, has revealed the deep-seated deficiencies in the existing models of healthcare delivery among institutionalized older adults and at the same time has shown the transformative capability of information and communication technology solutions.

This systematic review of available evidence demonstrates that there is a persuasive basis behind the use of ICT based-interventions in the management of chronic diseases in older adults with consistent positive results in the management of hypertension, diabetes and heart failure. Yet, the gap mentioned above in the context of inter-institutional consultation and care coordination studies highlights the novelty of the all-inclusive integrated care tools such as Health-RESPECT. Such a finding indicates that, although individual disease management with technology is thoroughly researched and proven to be effective, the greater issue of the coordination of complex care across multiple health care settings and providers has not been significantly addressed in existing research and practice.

The stakeholder engagement process showed that all stakeholders were aware of the systemic failures in the present care coordination strategies with all stakeholders consistently identifying the barriers to effective geriatric care delivery as universally as fragmented communication, lack of standardization and poor information sharing. These qualitative data were validated by the quantitative evaluation which allowed the exact evaluation of the extent and magnitude of issues related to the ordinary clinical practice and patient outcomes. The overlapping of the evidence based on the various research approaches helps to build a stronger belief in the needs that are identified and help to form the holistic approach that is the design of the Health-RESPECT system.

The creation and testing of the Health-RESPECT platform shows that it is possible to develop advanced, interconnected technology solutions that can respond to the entire range of geriatric care arrangement issues and at the same time is practical to deploy within an existing healthcare infrastructure. The above-mentioned is supported by positive feedback on the part of healthcare providers and the high-expressed desire of patients and families to implement technology-based care delivery, which can indicate good chances of successful implementation and continued use of full-fledged ICT-based geriatric care platforms.

Implications for Healthcare Policy and Practice Transformation

The implications of the results of this study are far-reaching and well beyond the specifics of Korean healthcare setting, and can be applied to every healthcare system that faces the difficulties of a sufficiently high rate of population aging and a corresponding rise in the risks of complex chronic illnesses in older populations. The

methodical detection of the deficiencies in care coordination, information sharing, and the shortcomings of assessment tools standardisation gives a pattern of interpretation of the typical difficulties that may affect numerous healthcare systems irrespective of particular organization organizations structure and financial processes.

The proven effectiveness of ICT-based chronic disease management interventions and the evident stakeholder need to have better care coordination solutions provide an excellent argument in favor of healthcare policy initiatives that would facilitate the development and implementation of overall digital health platforms in geriatric care. The economic consequences of the study, such as the considerable time and cost costs linked to the existing care delivery models indicate that ICT-based solution investments may result in a significant amount of return on investment due to efficiency and less usage of healthcare.

Nevertheless, effective implementation of holistic ICT-based geriatric care systems will necessitate a concerted policy action to respond to regulatory frameworks, reimbursement systems, and professional training needs. The existing policy ban on direct telemedicine in Korea is a case in point of why policy is needed to evolve to fit new models of care delivery without compromising on safety and quality. On the same note, the fact that reimbursement has been cited as a major issue amongst healthcare providers, over time, shows that there is a need to create sustainable financing models that can adequately compensate providers in line with time and expertise to effectively use advanced care coordination technologies.

The nature of the training and support needs identified on the basis of the research process proves the significance of the overall implementation planning and consideration of the technical and clinical competency development needs. Training to healthcare providers will not only be necessary on how to operate a system but also on the evidence-based clinical practices integrated in ICT platforms. This two-fold training path indicates that joint methods are necessary that would bring together the developers of technology and clinical education experts in order to have effective adoption and maximum utilization of advanced care coordination systems.

Future Research Directions and Evidence Development Priorities

Although the Health-RESPECT development process has given important information on the possibility and the potential success of the comprehensive ICT-based geriatric care platforms, there are a number of important research questions that need to be addressed by conducting serious clinical studies in order to develop the evidence base of broad use of such systems. The most direct research priority necessitated by the validation of the proposed theoretical benefit is the need of randomized controlled trials on the study of clinical outcomes, enhancement of the quality of life, and patterns of healthcare utilization.

Larger longitudinal research into the effect of integrated care platforms on functional deterioration courses, cognitive status preservation, and overall survival results would yield important information on the eventual efficiency of technology-enhanced geriatric care coordination. Such studies must include thorough economic evaluations looking at the direct medical spending effects as well as societal morals at large in the form of enhanced medical coordination and alleviation of family caregiver responsibilities. Formulation of proper outcome measures that reflect the entire range of benefits linked with better care coordination is a significant methodological issue that should be paid proper attention to in order to guarantee the meaningful evaluation of the effectiveness of interventions.

Scalability and flexibility of comprehensive ICT platforms in varied healthcare systems settings is another acute research field, where special emphasis is put on how effective models can be scaled out to other organizational, regulatory and cultural settings. A comparative effectiveness study of alternative methods of ICT-based care coordination may be of interest on the best system design features and implementation approaches to use in various health care settings.

Introducing new technologies to the geriatric care coordination platform, such as artificial intelligence, machine learning, and new predictive analytics, is a promising avenue in the future research and development. These technologies present opportunities in terms of improved clinical clinical decision support, adverse event prediction, and tailored care planning strategies in relation to patients-specific features and risk history. Nevertheless, their incorporation into the geriatric care platforms will have to be carefully considered in terms of efficacy, security and acceptability among older adults and their health professionals.

Acknowledgement: Nil

Conflicts of interest

The authors have no conflicts of interest to declare

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