



Please cite this article as: Anuar K., & Gani. A (2023), Performance Expectancy Among The Elderly Towards Intention To Use E-Health, (2023), Jilid 4, Bilangan 3, Paper ID 15-105

## PERFORMANCE EXPECTANCY TOWARDS INTENTION TO USE E-HEALTH AMONG THE ELDERLY

Nur Iffah Zafirah Khairol Anuar (a), Norhaninah A.Gani (b)  
\*Corresponding author

(a) Faculty of Business, Accounting and Social Science, Universiti Poly-Tech Malaysia, [iffahzafirah0232@gmail.com](mailto:iffahzafirah0232@gmail.com)

(b) Faculty of Business, Accounting and Social Science, Universiti Poly-Tech Malaysia, [norhaninah@uptm.edu.my](mailto:norhaninah@uptm.edu.my)

DOI:

Received 17 November 2023, Accepted 20 December 2023, Available online 29 December 2023

### ABSTRACT

Governments and healthcare planners see the aging population as an important concern. People believe that eHealth is a tool that can guarantee effective medical care. In addition, eHealth services can contribute to a longer and healthier life for the elderly. However, several barriers still prevent the widespread use of this strategy among the elderly. The purpose of the study is to apply the Technology Acceptance Model to investigate performance expectations among the elderly regarding the intention to use e-health in Malaysia. This study is a quantitative approach and uses convenience sampling. Therefore, data was collected through a questionnaire of 107 respondents, and this research covers adults aged 20 to 50 years and above. Future studies will test the hypotheses of the conceptual framework. This paper is a theoretical framework, and future research will examine the conceptual framework.

### ARTICLE INFO

*Keywords:*

*TAM,  
E-Health,  
Older adult,  
Performance Expectancy,  
Intention to use E-Health*

Copyright: © 2023 The Author(s)

Published by Universiti Poly-Tech Malaysia Kuala Lumpur

This article is published under the Creative Commons Attribute (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

## 1.0 INTRODUCTION

### Introduction

The integration of technology in healthcare, particularly in e-health systems, is crucial for improving access and quality of care, especially for the elderly population. As the brain ages, individuals may face challenges in understanding and adopting new technologies due to memory problems, cognitive decline, and slower thinking processes (Wang et al., 2017). This is a normal part of aging, as certain brain regions shrink and neuronal transmission slows down. Consequently, the elderly may find it difficult to grasp complex technological concepts, such as those related to e-health systems.

In today's society, where various industries heavily rely on technology, understanding the factors influencing the elderly's acceptance of e-health technologies is paramount. Research indicates that the elderly's perceptions of technology's utility significantly impact its adoption (Niehaves & Plattfaut, 2014). Performance expectancy, defined as the anticipated impact of technological advantages, plays a crucial role in shaping the elderly's intentions towards e-health technology (Nikou et al., 2020). However, uncertainty regarding performance expectations, especially in predicting outcomes, poses a challenge for the elderly in adopting new technologies (Nikou et al., 2020).

The concept of performance expectancy among the elderly regarding e-health systems influences their willingness to embrace these technologies. Studies suggest that performance expectancy strongly affects the elderly's acceptance of new technologies, emphasizing the importance of designing e-health systems that cater to their perspectives and preferences (Nikou et al., 2020). As healthcare systems increasingly leverage e-health technologies to enhance care quality, understanding the elderly's performance expectations becomes essential for promoting better healthcare outcomes and enhancing their quality of life (Wang et al., 2017).

The role of performance expectancy in e-health adoption among the elderly is pivotal, as it shapes their intentions towards utilizing these technologies. Factors such as cognitive decline, memory issues, and the complexity of technology interfaces can hinder the elderly's acceptance of e-health systems (Wang et al., 2017). Addressing these challenges through tailored design and user-friendly interfaces is crucial for enhancing the elderly's engagement with e-health technologies.

Previous studies have highlighted the significance of performance expectancy in influencing the elderly's acceptance of e-health technologies. Research has shown that while some older individuals perceive new technologies as daunting, others find them motivating and inspiring, leading to a ripple effect in the use of e-health services (Nikou et al., 2020). Understanding these varying perceptions is essential for designing effective e-health systems tailored to the needs of the elderly population.

The objective of this study is to investigate the performance expectations of the elderly concerning the use of e-health technologies, utilizing the Technology Acceptance Model (TAM) as a conceptual framework (Wang et al., 2017). By delving into the performance expectancy of the elderly in utilizing electronic health records and online healthcare services, the study aims to shed light on factors influencing their intention to adopt e-health. Ultimately, this research seeks to enhance the design of e-health systems to better cater to the unique needs of the elderly, thereby improving healthcare outcomes and quality of life for this demographic.

## 2.0 LITERATURE REVIEW

### 2.1 Performance Expectancy

Performance expectancy, as defined by Cheng Huang (2021), is a critical factor influencing the adoption of e-health services, particularly among the elderly population. It represents individuals' beliefs regarding the benefits they will gain from using a

system to enhance their performance and health outcomes. Studies by Chua et al. (2019) and Khan and Woosley (2021) emphasize the positive relationship between performance expectancy and the utilization of technology in healthcare, highlighting its role in improving access to health services, information, and support, especially in remote or underserved areas.

Furthermore, the Unified Theory of Acceptance and Use of Technology (UTAUT) incorporates performance expectancy as a key determinant of technology adoption, alongside factors like effort expectancy, social influence, and facilitating conditions (Dahri et al., 2020). This theory underscores the importance of users perceiving the value and benefits of technology in influencing their willingness to engage with it over the long term.

Additionally, research by Lin et al. (2021) demonstrates that performance expectancy significantly influences the continuous usage intention of middle-aged and elderly users in health-related applications. This finding further supports the notion that when individuals perceive tangible benefits and positive outcomes from using technology, they are more likely to continue its use.

In conclusion, the concept of performance expectancy plays a vital role in shaping individuals' attitudes and behaviors towards adopting e-health services, particularly among the elderly. Understanding and addressing this factor is essential in promoting the sustained use of technology in healthcare settings.

## **2.2 Intention to Use E-Health**

The field of e-health is rapidly evolving, encompassing various aspects of healthcare delivery and information exchange. Al-Kahtani et al. (2022) highlight the significance of e-health in improving access to healthcare services and enhancing patient care quality through electronic consultations. This aligns with the findings of studies by Vimalananda et al. (2015) and (Olayiwola et al., 2016), which emphasize the role of electronic consultations in bridging the gap between primary care and specialty care, thereby enhancing communication and providing timely access to high-quality care.

Moreover, the study by Jimenez et al. (2020) underscores the importance of digital tools like e-health applications in enhancing primary care consultations for conditions such as diabetes and depression. The integration of e-consults not only streamlines the referral process but also ensures the transfer of essential information between healthcare providers, as noted by (Rodriguez et al., 2015).

Furthermore, the research by Gabrielsson-Järhult et al. (2021) sheds light on the experiences and care patterns associated with telemedicine consultations in primary care settings. The study emphasizes the ongoing debate surrounding the implementation of telemedicine services and the potential benefits they offer in line with the vision for e-health.

In conclusion, the amalgamation of medical informatics, public health, and business in the realm of e-health signifies a transformative shift in healthcare delivery. By leveraging electronic consultations and digital tools, healthcare systems can enhance patient access, improve care quality, and optimize communication between primary care providers and specialists.

## **2.3 Theory of Technology Acceptance Model (TAM)**

This study presented the integrated model of the Technology Acceptance Model (TAM). The most important theory for ehealth acceptance is TAM. TAM has been created to be a key model in identifying behavioral predictors towards possible acceptance or rejection of the technology, according to the current research reviews [14]. Since its introduction, the TAM model has been widely confirmed in many segments. It has the potential to be an excellent tool for examining how well users

accept health technologies [16]. The final measurable construct in the TAM model is the intention to use e-health. "A measure of the strength of one's intention to perform a specified behavior" is how it is defined. Malaysian older people's performance expectations have an impact on their intention to adopt e-health. The Technology Acceptance Model (TAM) is a recognized framework for logic. They are frequently employed to investigate how someone acquires technical advancement and what factors influence the choice, acceptance, and purpose of applying an innovation [10]. TAM is regarded as one of the primary theoretical models with strong experimental support for clients' recognition of various forms of innovation, for both non-Western and Western countries [24]. TAM takes into account how humans behave when accepting new ideas; it is a modification of the psychological theory known as the Theory of Reasoned Action (TRA) [7]. TRA acknowledges that an individual's attitude and behaviors are determined by their observations and reactions to situations [13, 40]. According to the Technology Acceptance Model (TAM), perceived usefulness and ease of use are the two factors that affect how quickly technology is adopted and accepted. The term "usability perception" describes a metric that an individual believes would increase performance if they employ a specific piece of technology [10].

The degree to which a person perceives that utilizing particular approaches will need no physical or mental effort is known as perceived ease of usage [10]. According to TAM, people will be more willing to accept and adopt a technology or innovation if it can increase performance without requiring more energy to perform, demonstrating its usefulness and ease of use [43]. TAM was widely utilized in earlier research to look at how technology is used and accepted [5].

### 3.0 METHODOLOGY

The research methodology employed in this study utilizes the Technology Acceptance Model (TAM) to explore the performance expectations of the elderly regarding the intention to use e-health in Malaysia. This quantitative approach aims to gather empirical data to understand the factors influencing the acceptance and adoption of e-health services among the elderly population.

Convenience sampling was utilized to collect data from 107 respondents within the age range of 20 to 50 years and above. This sampling method was chosen for its ease of access to participants and cost-effectiveness, allowing for a broad representation of the target demographic.

Data collection was conducted through a structured questionnaire designed to assess respondents' attitudes, perceptions, and expectations towards e-health technology. The questionnaire likely covered aspects such as perceived usefulness, ease of use, perceived benefits, perceived barriers, and intention to use e-health services among the elderly.

The research primarily focuses on constructing a theoretical framework based on the TAM to understand the factors influencing the intention to use e-health services among the elderly in Malaysia. Future studies are proposed to test the hypotheses derived from this conceptual framework, allowing for deeper insights into the determinants of e-health adoption in the elderly population.

Overall, this research methodology aims to provide valuable insights into the acceptance and utilization of e-health technology among the elderly in Malaysia, thereby contributing to the development of effective healthcare strategies tailored to the needs of an aging population.

### 4.0 FINDINGS AND DISCUSSION

#### 4.1 Demographic

The frequency analysis is a component of the study's fundamental analysis. Gender, age, occupation, education level, race, and experience were among the demographic items in section a of the questionnaire. The pie chart presents the demographic characteristics of the data respondents

#### Gender

---

Copyright: © 2023 The Author(s)

Published by Universiti Poly-Tech Malaysia Kuala Lumpur

This article is published under the Creative Commons Attribute (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

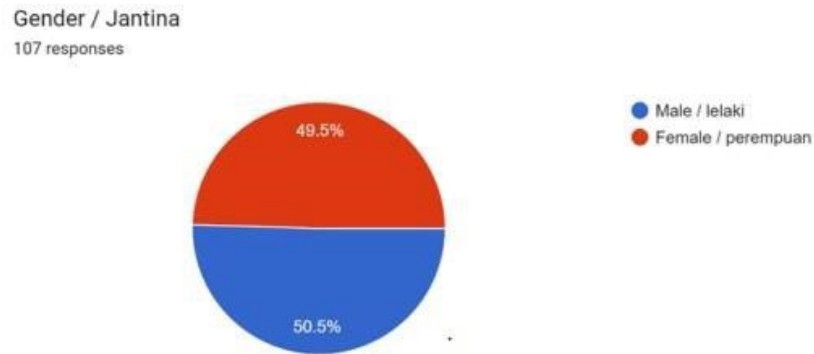


Figure 1: the percentage of age

The percentage of gender responders is shown in Figure 1 as 107 respondents. The majority of them are male, with a total of 54 people, or 50.5%, while the diverse genders have a total of 53 people or 49.5%.

## Age

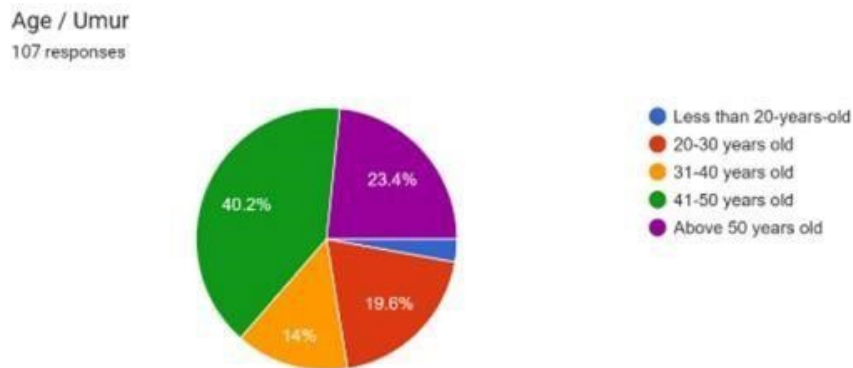


Figure 2: the percentage of age

Figure 2 shows the number of respondents by percentage of age. The majority of respondents in this survey are between the ages of 41-50 years old and are the highest, accounting for 43 people, or 40.2%. Above 50 years old is the second highest age group. That is 25 people, or 23.4% of the population. The group aged 20-30 years has 21 people, equivalent to 19.6%.

Copyright: © 2023 The Author(s)

Published by Universiti Poly-Tech Malaysia Kuala Lumpur

This article is published under the Creative Commons Attribute (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

The group aged 31-40 has 15 people, equivalent to 14%. The last group less than 20 years old is the lowest group with 3 people equivalent to 3.7%.

**Occupation**

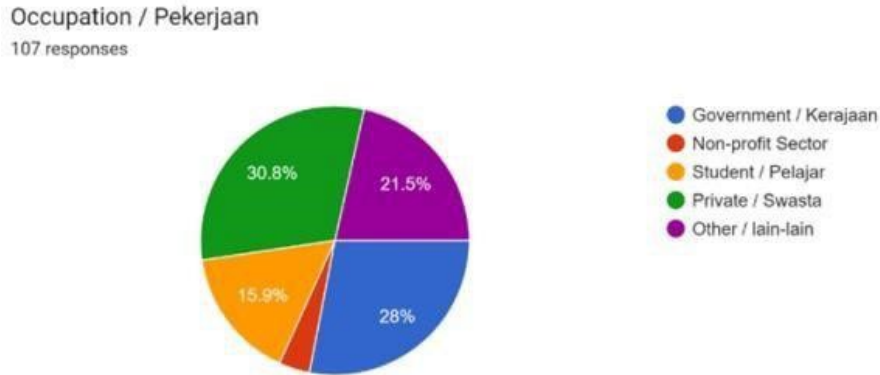


Figure 3: the percentage of occupation

Figure 3 depicts the percentage of occupations that responded to the survey. The private sector, with 33 responses or 30.8%, has the most occupants. The government sector is the second highest occupant. That is, 30 respondents, or 28%. Others have 23 respondents equivalent to 21.5%. Student has 17 respondents equivalent to 15.9%. the non-sector profit has 4 respondents, equivalent to 4.6%.

**Education Level**

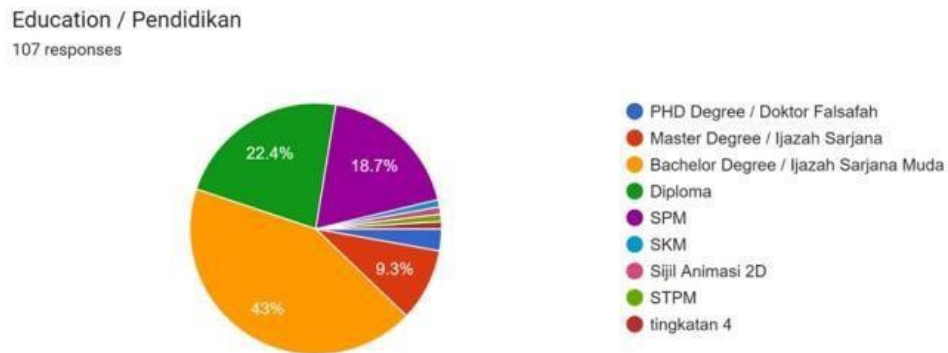


Figure 4: Percentage of education level

The percentage of respondents who conducted this study is shown in the table. The Bachelor's degree, 46 respondents with 43%, is the highest. The second highest is the Diploma level, with 24 respondents with 22.4%. Next, the SPM level is 20 respondents with 18.7%. master degree is 10 respondents with 9.3% and PhD level 3 respondents with 5.8%. Lastly, Others. this includes those education levels as Form 4 has 1 respondent with 0.9%, Sijil has 1 respondent with 0.9%, animation 2D has 1 respondent with 0.9%, SKM has 1 respondent with 0.9% and STPM has 1 respondent with 0.9%

**Race**

Copyright: © 2023 The Author(s)

Published by Universiti Poly-Tech Malaysia Kuala Lumpur

This article is published under the Creative Commons Attribute (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

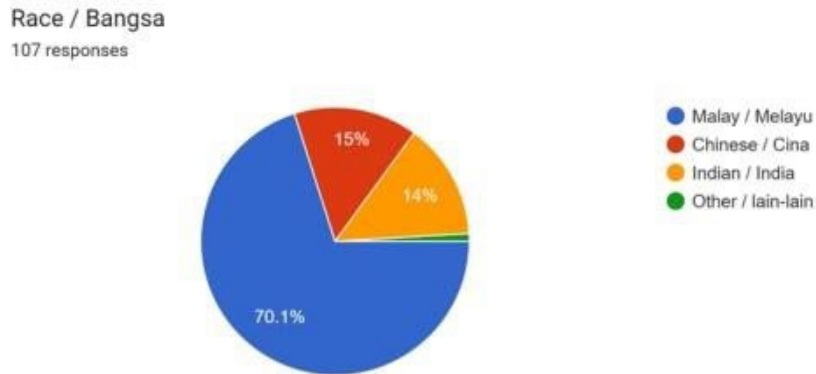


Figure 5: the percentage of race

Figure 5 shows the percentage of race that people respond to in the survey. The majority of respondents in this survey are Malay, with 75 respondents with 72.6%. The second highest is Chinese, with 16 respondents with 15%. Next, Indian 15 respondents with 14%. Lastly, the lowest is others, with 1 respondent with 0.9%.

### Experience Use E-Health

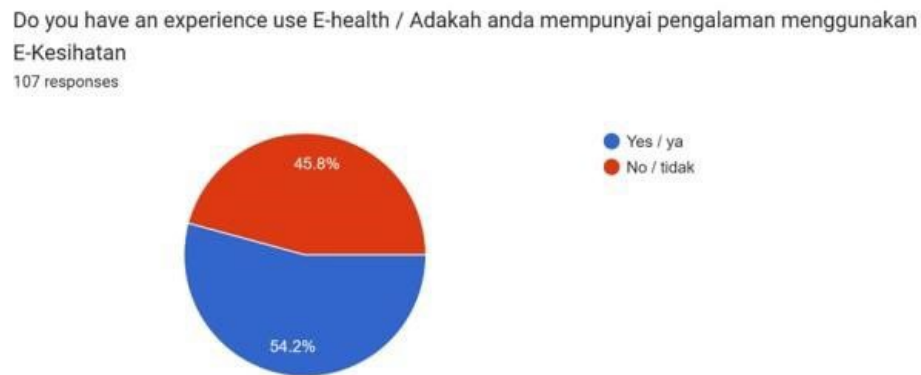


Figure 6: the percentage of experience using e-health

The percentage of respondents who conducted this study is shown in Figure 6. The majority of respondents in this survey are yes, 58 respondents with 54.2% and answered no, 49 respondents with 45.8%.

### Result of Inferential Analysis

Copyright: © 2023 The Author(s)

Published by Universiti Poly-Tech Malaysia Kuala Lumpur

This article is published under the Creative Commons Attribute (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

These data analysis approaches are used to establish how representative the sample results are of the population. Furthermore, based on statistics from a sample, inferential analysis is utilized to form inferences about the parameters (Schober, Boer, and Schwarte,2018)

**Pearson Correlation Coefficient**

The Pearson correlation coefficient analysis is one of the important analyses that measure the strength of the linear relationship between the independent variables (IV) and dependent variables. This analysis is to identify whether a correlation exists between the independent variables (perceived usefulness, perceived ease of use, technology anxiety, social support, facilitating condition, and performance expectancy) and dependent variables (intention to use e-health). If the researchers found a correlation, they had to decide the strength and direction of the association between the variables. Thus, the level of strength of the association determines whether it is acceptable to maintain the relationship.

Hypothesis 1

Ho1: There is a significant relationship between performance expectancy and intention to use e-health. \* The relationship between performance expectancy and intention to use e-health

Table 4.1: Result performance expectancy of Pearson Correlation Coefficient

**Correlations**

		PERFORMAN CEEXPECTA NCY	BEHAVIOURA LINTENTION
PERFORMANCEEXPECT ANCY	Pearson Correlation	1	.800**
	Sig. (2-tailed)		<.001
	N	107	107
BEHAVIOURALINTENTIO N	Pearson Correlation	.800**	1
	Sig. (2-tailed)	<.001	
	N	107	107

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 4.1 shows the relationship between performance expectancy and intention to use e-health is highly positive with a correlation coefficient of 0.800.

Both significant values are .001, which is less than the highly significant level of 0.05. It shows a significant statistical relationship between performance expectancy and intention to use e-health.

**5.0 CONCLUSION**

This paper focused on the performance expectancy among the elderly towards the intention to use ehealth. The findings showed that the three UTAUT model variables such as performance expectancy, intention to use e-health, and technology acceptance model were significant factors in predicting Malaysian older adults' acceptance and utilization of e-health. The biggest factor affecting elderly acceptance and use of e-health was performance expectancy; however, enabling conditions did not seem to have a significant role in predicting elderly acceptance and use of e-health. The results thus addressed a study gap in the acceptance and usage of e-health by the elderly in Malaysia and could assist practitioners in implementing workable strategies to promote the uptake of these technologies.



The study's objectives were achieved, the research questions were answered, and the hypotheses were confirmed and accepted in this study based on the analysis of a total of 107 Google Forms that could be used. The overall relationship shown in this study is between intentions to use e-health. This research can help other researchers in researching the experience of using ehealth and can be used as their reference. The results obtained in Chapter 4 through the Statistical Package for the Social Sciences (SPSS version 27) were discussed further and at the same time, conclusions were made based on the results obtained from the responses from the respondents. The results can be concluded that a significant relationship between performance expectancy and intention to use e-health. Therefore, all the information provided during this research is expected to help the researcher research the elderly interest towards e-health for their research.

## REFERENCES

- Dahri, A., Massan, S., & Thebo, L. (2020). An overview of ai enabled m-iot wearable technology and its effects on the conduct of medical professionals in public healthcare in pakistan. *3c Tecnología\_glosas De Innovación Aplicadas a La Pyme*, 9(2), 87-111. <https://doi.org/10.17993/3ctecno/2020.v9n2e34.87-111>
- Jimenez, G., Tyagi, S., Osman, T., Spinazze, P., Kleij, R., Chavannes, N., ... & Car, J. (2020). Improving the primary care consultation for diabetes and depression through digital medical interview assistant systems: narrative review. *Journal of Medical Internet Research*, 22(8), e18109. <https://doi.org/10.2196/18109>
- Lin, X., Li, P., Hou, X., Yu, H., Tang, T., Liu, T., ... & Huang, C. (2021). Middle-aged and elderly users' continuous usage intention of health maintenance-oriented wechat official accounts: empirical study based on a hybrid model in china. *BMC Medical Informatics and Decision Making*, 21(1). <https://doi.org/10.1186/s12911-021-01625-4>
- Niehaves, B. and Plattfaut, R. (2014). Internet adoption by the elderly: employing is technology acceptance theories for understanding the age-related digital divide. *European Journal of Information Systems*, 23(6), 708-726. <https://doi.org/10.1057/ejis.2013.19>
- Nikou, S., Agahari, W., Keijzer-Broers, W., & Reuver, M. (2020). Digital healthcare technology adoption by elderly people: a capability approach model. *Telematics and Informatics*, 53, 101315. <https://doi.org/10.1016/j.tele.2019.101315>
- Olayiwola, J., Anderson, D., Jepeal, N., Aseltine, R., Pickett, C., Yan, J., ... & Zlateva, I. (2016). Electronic consultations to improve the primary care-specialty care interface for cardiology in the medically underserved: a cluster-randomized controlled trial. *The Annals of Family Medicine*, 14(2), 133-140. <https://doi.org/10.1370/afm.1869>
- Rodriguez, K., Burkitt, K., Bayliss, N., Skoko, J., Switzer, G., Zickmund, S., ... & Macpherson, D. (2015). Veteran, primary care provider, and specialist satisfaction with electronic consultation. *Jmir Medical Informatics*, 3(1), e5. <https://doi.org/10.2196/medinform.3725>
- Vimalananda, V., Gupte, G., Seraj, S., Orlander, J., Berlowitz, D., Fincke, B., ... & Simon, S. (2015). Electronic consultations (e-consults) to improve access to specialty care: a systematic review and narrative synthesis. *Journal of Telemedicine and Telecare*, 21(6), 323-330. <https://doi.org/10.1177/1357633x15582108>
- Wang, Z., Yang, Z., & Dong, T. (2017). A review of wearable technologies for elderly care that can accurately track indoor position, recognize physical activities and monitor vital signs in real time. *Sensors*, 17(2), 341. <https://doi.org/10.3390/s17020341>