Opinions and Competencies of the Elderly and Disabled Towards the Use of Mobile Devices and Applications

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Abstract: *Many mobile applications have been developed for the elderly and disabled in recent years. The elderly and disabled can check their health information and access health services easier through mHealth (Mobile Health) applications. The aim of this study is to determine the competencies and opinions of the elderly and disabled towards these mobile devices and the NEU-LIFE ASSIST ANDROID application developed by researchers. In this context, the frequency with which the elderly and disabled use these devices and the effectivity of these devices has been researched. Therefore, the competencies of the elderly and disabled using mHealth applications can be determined and this data can be used in further studies. When the study findings regarding whether the elderly and disabled perceive themselves to be competent in using mobile devices are examined, it is observed that they can call, message and access information through the internet faster. When their opinions are considered, they stated that mobile devices and the NEU-LIFE ASSIST ANDROID application made their lives easier and improved their ability to communicate. Individuals who stated they could easily meet their needs at home using their mobile devices thought it would be more beneficial for mobile applications that enable this to be developed. Future studies should consider the development of more mobile applications that can be used in the field of health and investigate the effectivity of such applications.*

Keywords: *MHealth, Elderly and Disabled, Mobile Applications, Mobile Devices.*

1. Introduction

In today's technology, mobile devices and applications hold an important place. It is expected that the proportion of elderly adults in comparison to the total population will increase (Ammar et al. 2021). It is predicted that the proportion of over 65s globally will reach 12% and 23% by 2030 and 2100, respectively(United Nations: Department of Economic and Social Affairs, 2019). Most devices and applications may not be suitable to the skills and specifications of the elderly (Garcia-Penalvo et al., 2014). When mobile technologies are not designed to be user-friendly, they become difficult to use. Therefore, it is important to consider these needs when designing new technologies (Baranseli, & Şafak, 2020) When designing health information technologies and applications, it is important to ensure that they are accessible for the elderly and disabled. The World Health Organization (WHO) stated that they provide mHealth services through mobile devices smart phones and tablets (Searcy et al., 2019). These applications must be designed to be suitable for the elderly, disabled or chronic patients (Kırca et al., 2021). Even though mobile technologies have become more common and many advancements have been made in mobile health, its potential for the elderly has only recently being considered (Li et al., 2021).

Although studies show an increase in smart phone usage, the same cannot be said for the adoption of mHealth technology. The reason for this is that there are many aspects preventing the elderly and disabled from using applications (Hoque & Sorwar 2017). There are many examples of mobile applications designed for elderly adults. These applications include content such as emotional support, physical activity, nutrition, health data and motivational content (Choi et al., 2023). Mobile devices are also very important for the elderly and disabled. A study conducted on a house automation system design and application controlled by a mobile device showed that the system can be designed for the needs of the elderly and disabled (Rojas-Rodríguez et al., 2015). This study shows that the mobile device usage competencies of the elderly and disabled are very important.

1.2. Related Studies

As a result of the literature review, it is observed that emphasis is placed on making it easier for the elderly to increase the adoption of mobile health applications through the way in which they are designed. A study showed that in the interface design recommendations specified by the elderly in a systematic review analysis, applications must be designed

according to perceptual limitations, motor coordination problems, and cognitive and memory deterioration (Liu, Yin, Tan, Ngiam, & Teo, 2021). Another study showed that although applications such as mHealth have aspects that can teach, ensure communication, and make urgent notifications, the elderly must take responsibility and have the desire to use these devices and the text size can cause usage limitations (Lee, Seohyun, & Park, 2023).

Additionally, mHealth applications have positive effects on Parkinson's disease, autism and dementia (Chuckun et al., 2019; Zapata et al., 2015). In another study conducted on mHealth applications, people with disabilities expressed negative opinions regarding the accessibility of mHealth mobile applications.

As can be understood from this study, there are many mHealth applications developed for elderly adults and people with disabilities. The mobile devise usage competencies and opinions of the elderly adults and people with disabilities have been examined in this study. It is thought that this gap in the literature will be eliminated through this study, together with the mHealth application that will be developed by determining the needs and design situations in this field.

The aims of this study include elucidating on the needs and competencies of elderly adults and people with disabilities with regard to the development of mobile devices and applications in the future. The NEU-LIFE ASSIST ANDROID APPLICATION Developed by researchers for the urgent or daily needs of elderly and disabled individuals.

Thanks to the NEU-LIFE ASSIST android application, elderly and disabled individuals can reach emergency helplines.

2. The Aim of the Research

The aim of this study is to determine the competencies and opinions of elderly adults and people with disabilities towards mobile device use. In this context the study aimed to determine the effect of applications and NEU-LIFE Assist android application with regard to the frequency with which the elderly and people with disabilities use mobile devices. Answers to the questions below were sought.

1. What proportion of the elderly and people with disabilities own a mobile device?

2. What are their proficiency levels in using mobile devices?

3. What are their opinions on using mobile devices?

3. Method

3.1. Research Design

The data of this research were obtained using the descriptive scanning method in which quantitative findings were collected. The qualitative data of the study were collected using a survey developed by the researchers.

3.2. Participants

The study sample was comprised of elderly and people with disabilities who participated in the survey in 2018. In terms of gender, 55% (165 people) of the 300 elderly and people with disabilities who participated in the study were male and 45% (135 people) were female. In this study, a survey developed by the researchers was conducted with the elderly and people with disabilities about their competencies and opinions on the use of mobile devices.

3.3. Data Collection & Instrument

The study began with a literature review of studies conducted on mobile applications. In the first phase of this study, national and international indices were screened, the publications in this field were examined and the problem situation of the study was determined. In the second phase of the study, data collection tools were developed to determine the opinions and competencies of the elderly and people with disabilities towards mobile device usage. In this regard, a 5-point Likert type survey form was developed by the researchers to collect quantitative data. The researchers developed a survey to determine the competencies and opinions of the elderly and people with disabilities toward the use of mobile devices. The process of developing the survey began with a literature review. The survey consists of two sections and there are three questions in the first section aimed at determining the demographic information of the participants. The second section consists of 20 questions directed towards the mobile device usage competencies and opinions of the participants. The first 10 questions comprise the answers "I am insufficient", "I am indecisive" and "I am sufficient" and are evaluated from 3 to 1. The evaluation of the last 10 questions is conducted from 5 to 1 with the answers "I strongly do not agree", "I do not agree", "I am indecisive", "I agree" and "I strongly agree". When analysing the study data, quantitative data were examined according to mean values. The participants were notified that their personal information would not be used in the findings and confidentiality would be ensured.

4. Findings and Discussion

4.1. Having a mobile device

The mobile device ownership status of the study participants is given in Table 1.

Table 1: Mobile device ownership status of the study participants

Do you own a mobile device	f	%
Yes	239	79.66
No	61	21.44
Total	300	**100.0**

Source: Author's Work

As seen in Table 1, 79.66% (239) of the study participants stated that they did own a mobile device and 21.44% (61 people) stated that they did not own a mobile device. According to Pew Research Centre, (2021) the rate of elderly adults owning a smart phone rose from 10% in 2011 to 61% in 2021 (Wilson, Byrne, Rodgers, & Maden (2022). In light of these findings, it is necessary to design mobile applications focussed on the elderly and people with disabilities.

4.2. Determining the Mobile Device Usage Competencies of the Elderly and People with Disabilities

Data on Mobile Device Usage Competencies of Elderly and People with Disabilities has been provided in Table 2.

Table 2. Mobile Device Usage Competencies of Elderly and People with Disabilities

I am sufficient (1.00- 1.66), I am uncertain (1.67 – 2.33), I am insufficient (2.34 – 3.00)		
Usage Proficiencies	**Mean**	**Std. Deviation**
I can make calls with mobile devices	1.38	0.75
I can write and send messages with mobile devices	1.45	0.76
I can access the internet with mobile devices	1.62	0.87
I can take and share photos or make online posts with mobile devices	1.77	0.93
I can record and share videos or post them online with mobile devices	2.07	1.0

I can download and use new applications with mobile devices	2.45	.98
I can search for the applications that I need using mobile devices	2.52	1.1
I can use social media tools using mobile devices	2.45	.98
I can do the necessary updates on mobile devices	2.92	1.0
I can solve software problems that may occur when using a mobile device	2.97	1.0

Source: Author's Work

I am sufficient (1.00- 1.66), I am uncertain (1.67 – 2.33), I am insufficient (2.34 – 3.00)

When Table 2 is examined, it can be observed that the participants perceive themselves to sufficient for the items "I can make calls with mobile devices", "I can write and send messages with mobile devices " and "I can access the internet with mobile devices". The items that people were uncertain about included "I can take and share photos or make online posts with mobile devices" and "I can record and share videos or post them online with mobile devices". The items to which they answered "I am insufficient" are: "I can download and use new applications with mobile devices ", I can search for the applications that I need using mobile devices ", "I can use social media tools using mobile devices", I can do the necessary updates on mobile devices "and "I can solve software problems that may occur when using a mobile device ".

When the statements made by the elderly and people with disabilities are examined, it is seen that they feel competent in making calls and sending messages using mobile devices. However, with regard to the use of applications, it is seen that they are insufficient.

It should be ensured that problems affecting the usability of mobile applications and mHealth in older adults are classified and interpreted based on internal barriers such as cognition, motivation, physical ability and perception barriers (Wildenbos, Peute & Jaspers 2018).

However, according to Parker et al., (2013), in order for the elderly to use mobile technologies, their health needs, experiences, expectations and concerns must also be considered. Understanding the factors that affect the technology being accepted can result in the elderly who especially live in

developing countries to shy away from digital platforms (Palas et al., 2022). Therefore, the mobile technology usage proficiencies of the elderly and people with disabilities must be considered when developing mobile applications. In the study conducted by Mohadisdudis & Ali (2014), it was found that the economic situation of the elderly, their eyesight problems and the problems they face when using technology results in issues when using these devices.

4.2. The opinions of the elderly and people with disabilities toward mobile device usage

Opinions of the elderly and people with disabilities toward mobile device usage are presented in Table 3.

Table 3. Evaluation of the opinions of the elderly and people with disabilities toward mobile device usage

Opinion Survey Statements	Mean	Std. Deviation
Mobile devices Are indispensable today	2.07	1.0
Mobile devices make our lives easier	3.90	1.3
Mobile devices help feel comfortable	3.85	.81
Mobile devices help me feel safe	3.85	1.4
Mobile devices ensure communication	3.85	1.2
Mobile devices help visual communication	3.80	1.4
Mobile devices allow me to be reached whenever and wherever	3.75	1.2
Mobile devices provide information that will support personal development	3.75	1.1
Mobile devices can benefit my education	3.70	1.1
I can meet my needs without leaving my home using mobile devices	3.60	1.2

Source: Author's Work

I strongly do not agree (1.00-1.80), I do not agree (1.81-2.60), I am uncertain (2.61-3.40), I agree (3.41-4.20) I definitely agree (4.21-5.00)

Table 3 shows that individuals were positive towards the items "Mobile devices make our lives easier, "Mobile devices help me feel comfortable", "Mobile devices help me feel safe" ," Mobile devices ensure communication", "Mobile devices help visual communication", "Mobile devices allow me to be reached whenever and wherever" , "Mobile devices provide information that will support personal development" ," Mobile devices can benefit my education" and "I can meet my needs without leaving my home using mobile devices" and responded with "I agree". These opinions also show that the NEU-LIFE ASSIST android application developed by the researchers has created positive opinions.

The item that individuals did not agree with was "Mobile Devices Are Indispensable Today".

When the opinions of the elderly and people with disabilities regarding mobile device usage are examined, it is seen that they have positive views on mobile device usage, particular in terms of being able to meet their needs without leaving their homes, as the functions of mobile applications can meet the needs of the elderly and have a positive effect on their quality of life, as stated by Plaza et al., (2011). These devices also affect health, energy and home care. This also shows that the elderly use technology in their daily lives and that the design of this technology must be user friendly (Iancu & Iancu, 2020). Another study showed that the elderly adults especially use their mobile devices to access news on social media (Busch et al., 2021). This shows that the elderly and people with disabilities have a positive outlook on the use of mobile devices. Providing the necessary training for the elderly to increase their digital competencies can support their attitudes through increasing the benefit they will get from using this technology (Hill et al., 2015). The positive opinions portrayed in these findings show that the usage of technology can increase social connections, quality of life and prevent mental regression in the elderly and people with disabilities and they can become more independent (Czaja et al. 2006; Tun & Lachman, 2010; LoBuono et al., 2020). Therefore, studies show that when developing mobile applications, the needs of the elderly and people with disabilities must be considered.

5. Conclusion and Future Studies

When the study findings are examined, and the situations where the elderly and people with disabilities see themselves as sufficient in the use of mobile devices are considered, it is seen that they can use mobile devices for calls, messaging and browsing the internet to access information quickly.

When the situations where individuals see themselves as insufficient are examined, it is concluded that the necessary skill training and training for secure mobile device usage must be given. It has also been concluded that the design of mobile applications created in future studies must provide the opportunity for these applications to be used at the highest level in light of the related skills. When the views are examined, it is seen that people stated that mobile devices make their lives easier, that they feel more comfortable and can communicate easier. These opinions also show that the NEU-LIFE ASSIST android application developed by the researchers has increased positive opinions. Individuals who stated they can easily meet their needs from home using their mobile devices also stated that NEU-LIFE ASSIST ANDROID APPLICATION developed in this regard can be beneficial to them. Future studies must focus on developing more mHealth applications that can be used in the field of health and the effectivity of these applications must be researched. In this regard, it is recommended that various practices be developed in order to improve the competencies of individuals in line with their needs.

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