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Using Assistive Technology in Caring for the Elderly from the Perspective of Social Work

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***Abstract*---**This research aims to explore using latest assistive technologies in caring for the elderly from the perspective of social work in Egypt. The participants in this study were older adult of age above 70 years who are members of the Egyptian Society for the Care of the Elderly in Heliopolis. The total sample size taken for study is 45 older persons male and female. Its quantitative cross-sectional research and the tool used for this research is questionnaire. Assistive technology in older adults is measured by the reliable scales. Purpose of this research is to find how much extent to which the elderly use assistive technology in their lives (Smartphone applications - tablets - smart watches - remote monitoring system - security and safety monitoring system) And also Identifying obstacles to the elderly use of assistive technology for their care. In our study it is found that older adults are aware of modern technologies and also can use some of the technologies from to high level.It can be seen that using control system to stay in touch with doctors is low in older adults. The implications of this research are that it gives awareness to community, social care workers and government official about the possible usage and manufacturing of technological devices for elders.

***Keywords*---**assistive technology, old age, social care workers.

Introduction

The rapid growth and rise in the life expectancy of the older population it has contributed to new constructive ageing models in which older adults are encouraged to lead satisfying lives and to respond to degenerative changes to retain functionality, autonomy and quality of life. For many older people, independence is a fundamental problem as they mature (Demiris et al., 2004). Technology now facilitates many day-to-day activities or streamlines them. In addition to the aging of global populations, this continued technological progress is occurring, generating technology opportunities to assist older people in daily tasks and activities, such as financial planning and communicating with friends

and family. Innovations also can provide timely steps to help older adults remain safer and independent for longer. In addition to the aging of global populations, this continued technological growth creates opportunities for technology to support older people in daily tasks and activities, such as financial planning and communicating with friends and family (Vaportzis et al., 2017).In view of that, in the light of economic and social justice ideologies and the fair distribution of income, the interests of the elderly are of great significance and a good deal under the Egyptian Constitution and Egyptian domestic laws.

In Today's world technologies are considered to be as source of the upbringing of the elderly. Technologies optimize the life quality of older adults and improve aging day by day. On the one hand it helps to compensate ability losses and disabilities. As a result, technology will become more valuable as a product in the future. Technologies gadgets are viewed as appropriate equipment to help ageing and caregiving, while also signalling commercial possibilities and cost savings, such as in the health service. (cf. Georgieff 2008; VDE 2008; Wichert/Norgall 2009).

The technology must be utilized to assist caregivers and also help to give convenient nursing services. In addition, information and communication technology are likely to boost the elderly independence and sense of security. Smart houses and smart environments reflect the ideal of remaining at home for the rest of it's life, either well, sick, or otherwise reliant on others. In today's modern world elder individuals can benefit from smart technology in terms of their treatment, recovery, and health promotion. Assistive technology (AT) is frequently marketed as a way for elderly people, particularly those with dementia, to maintain their individuality and standard of living by allowing them to remain in their own homes. It involves the integration of a variety of electronic devices into ordinary things to monitor the user's state and give support as needed, such as feedback, instruction, alerts, or dangers.

It have been long ago technologies identified as having an impact on aging and the elderly: the Political Statement and Madrid International Plan of Action on Ageing, published in 2002, states in its emergence that "realizing the potential of this technology to concentrate on, inter alia, the personal, social, and health implications of ageing, in particular, in developing countries" should be a priority (Second World Assembly on Ageing 2002: article 12). It emphasizes the availability of technology that may be utilized to encourage independence; bringing people together, minimize marginalization, loneliness, and age discrimination, and produce beneficial socioeconomic improvements. It raises concerns about many elderly people's have absence of availability to modern technologies and suggests that "actions that allow elderly adults to be have access to, participate in, and adapt to technological advances should be done" as an action item (Second World Assembly on Ageing 2002: article 38). They offer health assistance to patients older individuals in maintaining their autonomy and living away from home for longer periods of time. Tele-care is the umbrella name for these technologies. However, in addition to the positive advantages, theorists are theorizing on the social and legal hazards of tele-care, particularly in relation to the problem of technological failure and who bears the responsibility, the users or the system integrators (Percival/Hanson 2006).

People with impairments can use assistive technology to live active, safe, productive, autonomous, and respectful lives. To meet the issues faced by an elderly population and to support active ageing and independent living, there is a constant need for increasing deployment of AT in community health services across the world. Smart home technologies are those that use tools to track people's health and well-being in their homes while also promoting dignity and independence. Home automation systems are intelligent surroundings meant to improve the owner's quality of life: smart houses have the ability to promote the independence of elderly individuals with impaired cognitive or physical capabilities. The purpose of constructing smart homes for older people is twofold: to support their capacity to age in situ while also controlling health-care expenses, which are expected to rise as the European population's average age rises (2008 Demiris/Hensel)

According to studies, the mass quantity of elderly individuals prefers to live freely in their own homes as they become older. Alarm systems and internet communication tools, for example, can allow care to be provided without the need for physical presence (Nikou, et.al., 2019; Szczepura, 2011). As a result, in recent years, the need for healthcare systems has skyrocketed (Mardini, et.al., 2019) The growing demands for digital revolution, combined with the rapidly growing aging population, has led the municipalities, and county councils to develop a common vision for electronic-health for the year 2025, in which the world will utilize the facilities given by digitalization (Regeringskansliet, 2016).

The general public's perception of ease of use has long been regarded as a crucial predictor of technology acceptance. The "senior technology acceptance model (STAM)" was created to capture new variables important to older persons, such as age-related neurocognitive changes, and e-learning self efficacy, by increasing “TAM's” relevance to older groups. Another model developed by the Centre for Research and Education on Aging and Technological Improvement (CREATE) looked at the influence of various complicated aspects on older persons' propensity to use technologies, such as their attitudes toward technology. Furthermore, the matching people and technology model considers a person's overall demands, lifestyle, and personal aspects including motivation, mood, preparedness, and inclination. Despite the fact that these models cover a wide range of topics, they do not answer.

The interplay of other pertinent aspects with information and communication technology adoption by healthcare consumers is explained and predicted by a model. The “HAAT” model provides a framework for analyzing the connections between the four factors: humans, activities, technology, and setting. The “HAAT” model is considered as a tool that allows a human to do a task in a given environment. Other interaction models, such as the individual model and the “person–environment–occupational performance model”, are based on this model. The human aspect covers physical, cognitive, and emotional elements; activity encompasses self-care, performance, and relaxation in various situations; AT contains intrinsically and extrinsically facilitators; and context encompasses physiological, social, economic, cultural and institutional variables. Users have varied perceptions and priorities, along with how they think of AT, and they use and communicate about their technology differently, according to the findings of

these models.

According to an existing literature by Peek et al., an elderly person's attitudes on and adoption of AT are influenced by personal, social, and physical aspects. Along with technological and contextual considerations, Lee and Coughlin recognized the human element as a predictor of older individuals' adoption of AT. The social support, feelings, autonomy, experience, trust and confidence of the elderly were all considered human factors. The "human" aspect, according to Larsen et al. must be the most important factor since failing to utilize a "client-centered approach" throughout the distribution process may prevent the AT from being used. The usage of AT is also influenced by a person's age and degree of education. These connections, however, are not always obvious. Reduced health status has been shown to be a barrier to AT usage in older persons, particularly those with cognitive decline or dementia.

Technology acceptance model

Fred D. Davis proposed the "Technology Acceptance Model (TAM)" in 1989. The model was designed as a metric for forecasting how well a technology will be received by people (Davis, 1989). The perceived usefulness (U) and perceived ease of using it (E) are the two primary factors in this model (E). The perceived utility of technology relates to how much consumers believe it will help them do their jobs better. The second variable, perceived ease of use, relates to whether people believe the technology is too difficult to use and hence do not utilize it, despite the fact that it may be valuable to them (Davis, 1989). External influences are said to influence user satisfaction and convenience of use, according the paradigm. These two aspects influence the user's mindset toward utilizing the system as well as their behavioral intention to use it, which in turn influences how the system is actually used (Davis et. al., 1989). Since its inception, the Technology Acceptance Model has grown in popularity as a popular theory for explaining and predicting the usage of information technologies. TAM has been proven to be a valuable conceptual perspective in helping to explain a user's behavior within an informational system in a number of researches (Legris et. al., 2003).

In both the scholarly and governmental sectors, the topic of ageing and technology has grown more relevant. Many experts believe that some of the issues posed by the demographic change may be addressed via the use of technology. Technical equipment is used. However, technological advancement is not always smooth. It focuses on innovation rather than a consumer need The emphasis is on the viability of the technologies is often overlooked, while the user's viewpoint is often overlooked. One of the implications of this omission is that many goods have become obsolete. Which are designed for the elderly are rejected by them, (Technische Pelizäus-Hoffmeister 2013; Universität Berlin 2011)

Purpose of the study

Determining the extent to which the elderly use assistive technology in their lives (smartphone applications - tablets - smart watches - remote monitoring system - security and safety monitoring system).

- Identifying obstacles to the elderly's use of assistive technology for their care
- Determine the differences that are attributed to demographic variables such as (gender - education level - previous work) with regard to the use of assistive technology in the lives of the elderly.
- Develop proposals to develop and activate the use of assistive technology in caring for the elderly from a social service perspective.

Study questions

- To what extent do the elderly use assistive technology in their lives (smartphone applications - tablets - smart watches - remote monitoring system - security and safety monitoring system).
- What are the obstacles to the use of assistive technology by the elderly to take care of them?
- Are there statistically significant differences attributable to demographic variables such as (gender - education level - previous work) with regard to the use of assistive technology in the lives of the elderly.

Method

Study design

This was an analytical cross-sectional study conducted on the old age of above 70 who were members of the Egyptian Society for the Care of the Elderly in Heliopolis. These participant are not residents of the nursing home, but benefit from the services provided by the association and participate in its activities. In this cross-section, the quantitative research method is primarily used for data collection and a sample of a total of 45 old age men and women selected who was meeting for the study criteria. A questionnaire was distributed to a number of 80 elderly who they frequent the association permanently, and the number of those who agreed to participate in the study reached (45) out of a total of 80 of those present in the association. Participants were informed that their participation was entirely voluntary and that they could refuse any question if they felt uncomfortable. Older people are provided informed written consent.

Population

Data collection procedure and ethical considerations
Measurement instruments

The questionnaire was used as a tool for data collection in this study. The questionnaire included five dimensions to measure the extent to which the elderly use some assistive technology such as smart phone applications - tablets - smart watches - remote monitoring system - security and safety monitoring system, in addition to another dimension about obstacles That facing the elderly in the use of assistive technology means, and finally after proposals for developing and activating the use of assistive technology in caring for the elderly from a social service perspective. In order to standardize the questionnaire in terms of honesty and reliability, it was initially presented to (10) social work professors from the Department of Social Work, Umm Al-Qura University, Beni Suef University and

Helwan University, and the questionnaire was formulated in its final form for phrases that obtained an agreement rate of more than 90 %. To verify the reliability, the Alpha-Cronbach reliability coefficient was used, whose degree was (0.89), as well as the stability using the split-half method, and its degree was (0.87).

Study Results

Participants Description
Demographic Variables

Table 1
Frequency Table for Demographic Variables

		Frequency	Percent
Gender	male	17	37.8
	female	28	62.2
	Total	45	100.0
Age	50-60	7	15.6
	60-70	26	57.8
	70+	12	26.7
	Total	45	100.0
Educational Level	High school	9	20.0
	Bachelor's degree	33	73.3
	Master's degree and above	3	6.7
	Total	45	100.0
Previous Job	private sector	6	13.3
	public sector	32	71.1
	otherwise	7	15.6
	Total	45	100.0

From the previous table we can see that: The percentage of males in the sample is 37.8% and the percentage of females in the sample is 62.2%. The percentage of ages between 50 and 60 in the sample is 15.6%, the percentage of ages between 60 and 70 in the sample is 57.8% and the percentage of ages over 70 in the sample is 26.7%. The percentage of people whose educational level was high school in the sample is 20%, the percentage of people whose educational level was Bachelor's degree in the sample is 73.3% and the percentage of people whose educational level was Master's degree and above in the sample is 6.7%. The percentage of people whose previous jobs were in a private sector in the sample is 13.3%, the percentage of people whose previous jobs were in a public sector in the sample is 71.1% and the percentage of people whose previous jobs were otherwise in the sample is 15.6%.

Table 2
Frequency Table for Phone Application Usage

		very little	little	moderate	high	very high	Mean	Extent of Use
Using phone apps to track blood pressure	Frequency	4	15	12	6	8	2.98	moderate
	Percentage	8.9	33.3	26.7	13.3	17.8		
Using phone apps to remind when to take medications	Frequency	3	12	12	9	9	3.20	moderate
	Percentage	6.7	26.7	26.7	20.0	20.0		
Using phone apps to find the locations	Frequency	0	4	6	23	12	3.96	high
	Percentage	0	8.9	13.3	51.1	26.7		
Using phone apps to track nutritional needs	Frequency	3	16	11	4	11	3.09	moderate
	Percentage	6.7	35.6	24.4	8.9	24.4		
Using phone apps to follow the weather news	Frequency	0	2	10	21	12	3.96	high
	Percentage	0	4.4	22.2	46.7	26.7		
Using phone apps to track blood sugar	Frequency	5	14	13	4	9	2.96	moderate
	Percentage	11.1	31.1	28.9	8.9	20.0		
Using phone apps to track amount of drinking water per day	Frequency	5	14	14	4	8	2.91	moderate
	Percentage	11.1	31.1	31.1	8.9	17.8		

From the previous table we can see that using phone apps to track blood pressure in the sample is moderate (2.98 out of 5), using phone apps to remind when to take medications in the sample moderate (3.20 out of 5), using phone apps to find the locations in the sample is high (3.96 out of 5), using phone apps to track nutritional needs in the sample is moderate (3.09 out of 5), using phone apps to follow the weather news in the sample is high (3.96 out of 5), using phone apps to track blood sugar in the sample is moderate (2.96 out of 5) and using phone apps to track amount of drinking water per day in the sample is moderate (2.91 out of 5).

Table 3
Frequency Table for Tablets Usage

		very little	little	moderate	high	very high	Mean	Extent of Use
Using tablets in reading	Frequency	25	1	4	7	8	2.38	little
	Percentage	55.6	2.2	8.9	15.6	17.8		
Using tablets in making video calls	Frequency	28	1	7	3	6	2.07	little
	Percentage	62.2	2.2	15.6	6.7	13.3		
Using tablets as a	Frequency	30		3	6	6	2.07	little

voice reader	Percentage	66.7		6.7	13.3	13.3		
Using tablets in searching	Frequency	25	1	3	11	5	2.33	little
	Percentage	55.6	2.2	6.7	24.4	11.1		
Using tablets in sharing photos with friends	Frequency	26		7	5	7	2.27	little
	Percentage	57.8		15.6	11.1	15.6		
Using tablets in playing mind games	Frequency	29		8	4	4	1.98	little
	Percentage	64.4		17.8	8.9	8.9		
Using tablets in self-learning	Frequency	29	1	3	4	8	2.13	little
	Percentage	64.4	2.2	6.7	8.9	17.8		
Using tablets in reminding the daily calendar	Frequency	25		5	10	5	2.33	little
	Percentage	55.6		11.1	22.2	11.1		
Using tablets in recording the daily activity program	Frequency	29	1	7	4	4	1.96	little
	Percentage	64.4	2.2	15.6	8.9	8.9		

From the previous table we can see that using tablets in reading in the sample is little (2.38 out of 5), using tablets in making video calls in the sample little (2.07 out of 5), using tablets as a voice reader in the sample is little (2.07 out of 5), using tablets in searching in the sample is little (2.33 out of 5), using tablets in sharing photos with friends in the sample is little (2.27 out of 5), using tablets in playing mind games in the sample is little (1.98 out of 5), using tablets in self-learning in the sample is little (2.13 out of 5) , using tablets in reminding the daily calendar in the sample is little (2.33 out of 5) and using tablets in recording the daily activity program in the sample is little (1.96 out of 5).

Table 4
Frequency Table for Smart Watch Usage

		very little	little	moderate	high	very high	Mean	Extent of Use
Using smart watch in making calls	Frequency	34	1	5	3	2	2.38	little
	Percentage	75.6	2.2	11.1	6.7	4.4		
Using smart watch in measuring heart rate	Frequency	34		3	5	3	2.07	little
	Percentage	75.6		6.7	11.1	6.7		
Using smart watch in measuring sleep duration	Frequency	33	2	3	5	2	2.07	little
	Percentage	73.3	4.4	6.7	11.1	4.4		
Using smart watch in measuring walking distance	Frequency	33	1	4	5	2	2.33	little
	Percentage	73.3	2.2	8.9	11.1	4.4		

Using smart watch in counting steps during running	Frequency	33	1	4	5	2	2.27	little
	Percentage	73.3	2.2	8.9	11.1	4.4		
Using smart watch in measuring break duration	Frequency	33	1	3	5	3	1.98	little
	Percentage	73.3	2.2	6.7	11.1	6.7		
Using smart watch in calculating calories burned	Frequency	33	2	2	5	3	2.13	little
	Percentage	73.3	4.4	4.4	11.1	6.7		
Using smart watch in calculating stress ratio	Frequency	33	2	1	5	4	2.33	little
	Percentage	73.3	4.4	2.2	11.1	8.9		
Using smart watch in reminding turning the stove off	Frequency	33	1	1	8	2	1.96	little
	Percentage	73.3	2.2	2.2	17.8	4.4		

From the previous table we can see that using smart watch in making calls in the sample is little (2.38 out of 5), using smart watch in measuring heart rate in the sample is little (2.07 out of 5), using smart watch in measuring sleep duration in the sample is little (2.07 out of 5), using smart watch in measuring walking distance in the sample is little (2.33 out of 5), using smart watch in counting steps during running in the sample is little (2.27 out of 5), using smart watch in measuring break duration in the sample is little (1.98 out of 5), using smart watch in calculating calories burned in the sample is little (2.13 out of 5), using smart watch in calculating stress ratio in the sample is little (2.33 out of 5) and using smart watch in reminding turning the stove off in the sample is little (1.96 out of 5).

Table 5
Frequency Table for Control System Usage

		very little	little	moderate	high	very high	Mean	Extent of Use
Using control system to stay in touch with my doctor	Frequency	39	1		3	2	1.40	very little
	Percentage	86.7	2.2		6.7	4.4		
Using control system to get remote health care	Frequency	38	1		4	2	1.47	very little
	Percentage	84.4	2.2		8.9	4.4		
Using control system to follow my caretakers	Frequency	38	1	1	3	2	1.44	very little
	Percentage	84.4	2.2	2.2	6.7	4.4		
Using control system to check my health status	Frequency	38	1	1	3	2	1.44	very little
	Percentage	84.4	2.2	2.2	6.7	4.4		
Using control system to stay	Frequency	37		1	3	4	1.58	very little
	Percentag	82.2		2.2	6.7	8.9		

in touch with my friends	e							
Using control system to call anyone up	Frequency	38	1	1	3	2	1.44	very little
	Percentage	84.4	2.2	2.2	6.7	4.4		
Using control system to avoid loneliness	Frequency	37	1	1	4	2	1.51	very little
	Percentage	82.2	2.2	2.2	8.9	4.4		
Using control system to determine my location if I get lost	Frequency	38		1	4	2	1.47	very little
	Percentage	84.4		2.2	8.9	4.4		

From the previous table we can see that using control system to stay in touch with doctors in the sample is very little (1.40 out of 5), using control system to get remote health care in the sample is very little (1.47 out of 5), using control system to follow caretakers in the sample is very little (1.44 out of 5), using control system to check health status in the sample is very little (1.44 out of 5), using control system to stay in touch with friends in the sample is very little (1.58 out of 5), using control system to call people up in the sample is very little (1.44 out of 5), using control system to avoid loneliness in the sample is very little (1.51 out of 5) and using control system to determine locations in the sample is very little (1.47 out of 5).

Table 6
Frequency Table for Safety System Usage

		very little	low	moderate	high	very high	Mean	Extent of Use
Using sensors and internet-connected cameras	Frequency	38	2		3	2	1.42	very little
	Percentage	84.4	4.4		6.7	4.4		
Using safety system to respond to emergencies	Frequency	38	1		4	2	1.47	very little
	Percentage	84.4	2.2		8.9	4.4		
Using safety system to alert my caretakers if I take wrong medication	Frequency	38	1	1	3	2	1.44	very little
	Percentage	84.4	2.2	2.2	6.7	4.4		
Using safety system to alert me if my house is burned	Frequency	39	1	1	2	2	1.38	very little
	Percentage	86.7	2.2	2.2	4.4	4.4		
Using safety	Frequenc	39	1	1	2	2	1.38	very

system to alert If I've a heart attack	y							little
	Percentage	86.7	2.2	2.2	4.4	4.4		
Using safety system to alert If I fall	Frequency	39	1		4	1	1.38	very little
	Percentage	86.7	2.2		8.9	2.2		
Using safety system to alert If I'm attacked	Frequency	39	1		2	3	1.42	very little
	Percentage	86.7	2.2		4.4	6.7		
Using safety system to alert If I spend a long time at home	Frequency	39	1		3	2	1.40	very little
	Percentage	86.7	2.2		6.7	4.4		

From the previous table we can see that using sensors and internet-connected cameras in the sample is very little (1.42 out of 5), using safety system to respond to emergencies in the sample is very little (1.47 out of 5), using safety system to alert when taking wrong medication in the sample is very little (1.44 out of 5), using control system to alert when houses are burned in the sample is very little (1.38 out of 5), using control system to alert when heart attacks occur in the sample is very little(1.38 out of 5), using control system to alert when falling in the sample is very little (1.38 out of 5), using control system to alert when getting attacked in the sample is very little (1.42 out of 5) and using control system to alert when staying at home for a long time in the sample is very little (1.40 out of 5).

Table 7
Frequency Table for Limitations

		very little	little	moderate	high	very high	Mean	
The cost of using technology	Frequency		2	5	24	14	4.11	high
	Percentage		4.4	11.1	53.3	31.1		
Inappropriateness of technology for the elderly	Frequency		2	3	26	14	4.16	high
	Percentage		4.4	6.7	57.8	31.1		
Unaware of using technology for the elderly	Frequency		1	2	19	23	4.42	very high
	Percentage		2.2	4.4	42.2	51.1		
Inability to use technology for the elderly due to their health status	Frequency		2	7	20	16	4.11	high
	Percentage		4.4	15.6	44.4	35.6		
Low educational level for the elderly	Frequency	2	3	7	23	10	3.80	high
	Percentage	4.4	6.7	15.6	51.1	22.2		
Unwillingness to stay	Frequency	3	4	13	18	7	3.49	high

under control for the elderly	Percentage	6.7	8.9	28.9	40.0	15.6		
Technology crashes	Frequency	3	3	18	10	11	3.51	high
	Percentage	6.7	6.7	40.0	22.2	24.4		
Rejection of using technology for the elderly	Frequency	3	8	19	11	4	3.11	moderate
	Percentage	6.7	17.8	42.2	24.4	8.9		
Inappropriateness of place of residence	Frequency	3	11	12	12	7	3.20	moderate
	Percentage	6.7	24.4	26.7	26.7	15.6		
Slow internet connection	Frequency	2	4	11	19	9	3.64	high
	Percentage	4.4	8.9	24.4	42.2	20.0		
No Wi-Fi	Frequency	5	10	20	6	4	3.87	moderate
	Percentage	11.1	22.2	44.4	13.3	8.9		

From the previous table we can see that: The following limitations have a high effect: the cost of using technology (4.11 out of 5), the inappropriateness of technology for the elderly (4.16 out of 5), the unaware of using technology for the elderly (4.42 out of 5), the inability to use technology for the elderly due to their health status (4.11 out of 5), the low educational level for the elderly (3.80 out of 5), the unwillingness to stay under control for the elderly (3.49 out of 5), the technology crashes (3.51 out of 5) and the slow internet connection (3.64 out of 5).The following limitations have a moderate effect: the rejection of using technology for the elderly (3.11 out of 5), the inappropriateness of place of residence (3.20 out of 5) and the absence of Wi-Fi (3.87 out of 5).

Table 8
Frequency Table for Suggestions

		very little	little	moderate	high	very high	Mean	
Teaching the elderly the use of technology	Frequency		2	2	22	19	4.29	very high
	Percentage		4.4	4.4	48.9	42.2		
Encourage community institutions to teach the elderly the use of technology	Frequency		1		21	23	4.47	very high
	Percentage		2.2		46.7	51.1		
Volunteering to teach the elderly the use of technology	Frequency				22	23	4.51	very high
	Percentage				48.9	51.1		
Encourage charitable actors to provide technological means	Frequency			2	19	24	4.49	very high
	Percentage			4.4	42.2	53.3		

for the elderly								
Developing control systems	Frequency			5	21	19	4.31	very high
	Percentage			11.1	46.7	42.2		
Developing the awareness of the elderly about the importance of technology	Frequency			3	19	23	4.44	very high
	Percentage			6.7	42.2	51.1		
Periodic maintenance of technological means by care institutions for the elderly	Frequency		2	3	24	16	4.20	very high
	Percentage		4.4	6.7	53.3	35.6		
Providing technological means with voice commands	Frequency		4		15	26	4.40	very high
	Percentage		8.9		33.3	57.8		
Exempting importing societies of technological means from customs tariffs	Frequency		2	6	6	31	4.47	very high
	Percentage		4.4	13.3	13.3	68.9		
Providing high speed internet for the elderly	Frequency	1	2	2	5	35	4.58	very high
	Percentage	2.2	4.4	4.4	11.1	77.8		

From the previous table we can see that the following suggestions will have a very high effect: teaching the elderly the use of technology (4.29 out of 5), encourage community institutions to teach the elderly the use of technology (4.47 out of 5), volunteering to teach the elderly the use of technology (4.51 out of 5), encourage charitable actors to provide technological means for the elderly (4.49 out of 5), developing control systems (4.31 out of 5), developing the awareness of the elderly about the importance of technology (4.44 out of 5), periodic maintenance of technological means by care institutions for the elderly (4.20 out of 5), providing technological means with voice commands (4.40 out of 5), exempting importing societies of technological means from customs tariffs (4.47 out of 5), providing high speed internet for the elderly (4.58 out of 5).

Comparing study data according to demographic variables
According to gender

Table 9
T Test for Gender

	Gender	Mean	St. Dev.	T statistic	Sig.	Decision
Using phone apps	male	20.1	6.3	-2.37	0.02	significant
	female	24.8	6.7			
Using tablets	male	18.1	13.1	-0.59	0.56	not

	female	20.4	12.7			significant
Using smart watch	male	13.8	9.3	-0.71	0.48	not significant
	female	16.2	12.0			
Using computer	male	16.2	10.7	-1.51	0.14	not significant
	female	20.6	8.5			
Using remote	male	11.9	8.7	-0.54	0.59	not significant
	female	13.5	10.1			
Using remote control	male	10.8	8.0	-0.54	0.59	not significant
	female	12.3	9.7			
Using safety system	male	10.9	8.3	-0.21	0.83	not significant
	female	11.5	8.6			
Limitations	male	41.4	4.0	0.79	0.44	not significant
	female	39.9	7.2			

From the previous table we can see that there is a significant difference between males and females in using phone apps while there is no significant difference between males and females in limitations and using tablets, smart watch, computer, remote, remote control and safety system.

According to educational level

Table 10
F Test for Educational Level

	Educational Level	Mean	St. Dev.	T statistic	Sig.	Decision
Using phone apps	High school	23.96	2.600	0.456	0.800	not significant
	Bachelor's degree	22.39	1.164			
	Master's degree and above	27.33	4.055			
Using tablets	High school	22.67	4.472	0.584	0.545	not significant
	Bachelor's degree	18.30	2.261			
	Master's degree and above	23.33	5.239			
Using smart watch	High school	16.89	4.168	0.838	0.178	not significant
	Bachelor's degree	14.67	1.856			
	Master's degree and above	17.00	8.000			
Using computer	High school	22.78	2.543	0.310	1.203	not significant
	Bachelor's degree	17.64	1.697			
	Master's degree and above	22.00	6.807			
Using remote	High school	16.44	4.049	0.418	0.891	not significant
	Bachelor's degree	11.76	1.509			
	Master's degree and above	14.33	6.333			
Using remote control	High school	12.44	3.556	0.837	0.179	not significant
	Bachelor's degree	11.33	1.504			
	Master's degree and	14.33	6.333			

	above					
Using safety system	High school	12.44	3.556	0.703	0.355	not significant
	Bachelor's degree	10.70	1.336			
	Master's degree and above	14.33	6.333			
Limitations	High school	38.11	3.393	0.412	0.905	not significant
	Bachelor's degree	41.15	0.835			
	Master's degree and above	39.33	2.603			
Suggestions	High school	44.89	2.091	0.422	0.881	not significant
	Bachelor's degree	44.24	0.603			
	Master's degree and above	41.00	4.726			

From the previous table we can see that there is no significant difference between all educational levels in limitations, suggestions and using phone apps, tablets, smart watch, computer, remote, remote control and safety system.

Discussion

The purpose of the study was to examine the use of assistive technology by elderly care from the perspective of social work system. **In our study** older adults using phone apps to track blood pressure, track nutritional needs and those using phone apps to remind when to take medications are at moderate level exist. There is high number of older adults using phone apps to find the locations, to follow the weather news. There are some moderate older adults who track blood sugar, while some of them use phone apps to track amount of drinking water per day. It can be observed using tablets in reading, making video calls, as voice reader, in searching, in sharing photos with friends, in playing mind games, in self-learning, in reminding the daily calendar and recording the daily activity program in the sample is little. It is also seen that using smart watch in making calls, measuring heart rate, sleep duration, walking distance, in counting steps during running, in measuring break duration, in calculating calories burned, stress ratio and using smart watch in reminding turning the stove off in the sample is little.

It is observed using control system to stay in touch with doctors, to get remote health care, to follow caretakers, to check health status, to stay in touch with friends, to call people, to avoid loneliness and to determine locations in the sample is very little. It can be seen that using sensors and internet-connected cameras, safety system to respond to emergencies, to alert when taking wrong medication, using control system to alert when houses are burned, when heart attacks occur, when falling, when getting attacked, when staying at home for a long time. It is observed in our study finding that following limitations have a high effect the cost of using technology, the inappropriateness of technology for the elderly, the unaware of using technology for the elderly, the inability to use technology for the elderly due to their health status, the low educational level, to stay under control, the technology crashes and the slow internet connection. The following limitations have a moderate effect: the rejection of using technology, the inappropriateness of place of residence and the absence of Wi-Fi.

There are following suggestions that will have a very high effect: teaching the elderly the use of technology, encourage community institutions, volunteering to teach the elderly the use of technology. There should be encourage charitable actors to provide technological means for the elderly, developing control systems, developing the awareness of the elderly about the importance of technology, periodic maintenance of technological means by care institutions, providing technological means with voice commands, exempting importing societies of technological means from customs tariffs and providing high speed internet for the elderly. It can be seen there is a significant difference between males and females in using phone apps while there is no significant difference between males and females in limitations and using tablets, smart watch, computer, remote, remote control and safety system. It can be found that there is no significant difference between all educational levels in limitations, suggestions and using phone apps, tablets, smart watch, computer, remote, remote control and safety system.

Study limitations

This study is limited to elderly people and social care workers who were members of the Egyptian Society for the Care of the Elderly in Heliopolis and are not residents of the nursing home. Since this research aims to adapt a quantitative study in order to obtain a deeper knowledge of social workers attitude, a wider scope was not necessary. As one of the major limitations of the study was it has small sample size of social workers and it should use both quantitative and qualitative approaches. Although assistive technology can be described in a variety of ways, the types of assistive technologies it will be included in this research have been limited. Assistive technology will be defined in this thesis as technological equipment that make a procedure easier for aged care providers by utilizing or creating digital data in some way. Furthermore, the purpose of this research is not to describe how specific technologies work on a scientific level. The emphasis is on the application of technology.

More quantitative study is needed to determine which elements are more significant than others. There is need to discover whether there are any factors that operate as moderators or mediators between them. Other sorts of electronic technology for ageing in place, such as technology for chronic illness management or technology that encourages physical activity, require more investigation. Authors studying technology adoption are invited to draw on current ideas about how people use technology as well as build new theories that are relevant to community-dwelling older folks.

Implications for social work practice

These are some practical implications of social work practice: There should be improvements in existing technologies for older adults. Implementation of new technologies

- The study was useful for social and health care workers to give effective services to older adults “perspectives on assistive technology.”
- This may be accomplished through technological demonstrations for older people. Social care workers need to give proper training or coaching to

older adults in order to give strength to test out the technology in a risk-free setting.

- This study demonstrates how difficult it is to comprehend older persons' attitudes and usage of assistive technology, whether they have cognitive deficits or not.
- This research adds to a better understanding of the interconnections among the four components for older people: individuals, behaviors, technology, and the environment.

Conclusion

Professional caregivers, social workers, device manufacturers, administrators, regulators, and relatives who want to encourage society older individuals to begin utilising technology for older adults should be aware that acceptability is based on a variety of criteria that differ by person. An older adult may often have a variety of concrete technology-related issues, although the expected benefits of such a technology may be more abstract. As a result, real advantages must be communicated to the older adult while also addressing technology-related issues that are unique to that person. Demonstration of the technology, the opportunity to try out the technology in a risk-free environment, and training or coaching can be used for this purpose. It is advisable to involve professional caregivers, family members, and peers who already use the new technology in these interventions, since older people are sensitive to their influence. When an older adult does not see the need for a technology, it is highly unlikely that he or she will be inclined to start using it. The findings of this study imply that elderly adults have generally favorable thoughts and attitudes about technology at moderate level. They attempt to keep their sense of self for as long as possible by exercising control. Smart technology, such as specialized Internet applications, may aid older individuals in better managing and understanding their health issues, resulting in increased social connectivity. More study is needed on how technology breakthroughs may be promoted, advertised, and adopted to assist older people while taking into account all issues.

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