

ORIGINAL ARTICLE

IJPHY

SHORTENING REHABILITATION PROCESS OF PATIENTS USING IT-BASED TECHNOLOGY

^{*1}Seyed Siavash Sarkeshik

ABSTRACT

Background: In today's world, the application of information and communication technology is rapidly expanding and has transformed all aspects of life, including education, into its different forms, to the point where knowledge production is virtually impossible without the use of technology. On the other hand, the importance of its role in economic and social developments is increasing day by day. In recent years, we have seen the growth of the use of IT- technology, which initially served as an auxiliary tool and now as a factor in the development of education and treatment. So, this study aimed to investigate the shortening habilitation process of a patient using IT-based technology.

Methods: The design for this study was a semi-experimental design with two groups of the experimental and control group. The study participants were elderly clients referred to rehabilitation centers. Thirteen eight elderly participants in a Rehabilitation Center, Iran, were selected for this study. The samples were randomly assigned to two experimental (n=19) and control (n=19) groups. The study tools are SF-36 quality of life and demographic questionnaires. The questionnaire was collected at baseline, one month, and three after treatment. Descriptive analysis and independent t-test using SPSS (version 22) were used to analyze the data.

Results: In the present study, the role of information technology in elderly health programs has been studied. The preliminary analysis demonstrated no statistically significant difference between both groups and some demographic characteristics. Although both groups were comparable at baseline in terms of their quality of life scores ($P>0.05$), significant differences were found at two-time points after the treatments ($P<0.05$).

Conclusion: The findings of this study demonstrated that the type of information technology use could improve an individual's quality of life. Suggestions have been made to enhance the role of information technology, to facilitate the provision of services to the elderly, and to inform, provide the necessary warnings and speed up the response to the needs of the elderly.

Keywords: Elderly, rehabilitation, quality of life, IT-based technology, Information Technology, Computer.

Received 03rd April 2019, accepted 24th June 2019, published 09th August 2019



www.ijphy.org

10.15621/ijphy/2019/v6i4/185412

CORRESPONDING AUTHOR

^{*1}Seyed Siavash Sarkeshik

Senior IT Expert, Cloud Storage specialist
Technical Department, Negareh Information
Analysts Co, No 161, Motahari Street, Tehran,
Iran. email: siavash.sarkeshik@gmail.com



INTRODUCTION

In today's world, the application of information and communication technology (ICT) is rapidly expanding and has transformed all aspects of life, including education, into its different forms, to the point where knowledge production is virtually impossible without the use of technology [1]. On the other hand, the importance of its role in economic and social developments is increasing day by day [2]. In recent years, we have seen the growth of universities in the use of computers, which initially served as an auxiliary tool and now as a factor in the development of education [3]. Information technology has become one of the components of modern technology in a short time [4]. As societies and educational centers consider their livelihoods are based on the use of modern practices and access to international information [5]. However, the computer and the new technologies associated with it are not universally used by all, and this has been of interest to educational researchers [6]. Despite the importance of using this technology, inadequate fluency, and weakness in the proper use of the computer prolong the communication path and waste time and is not economically feasible [7]. From the viewpoint of psychologists, today, the dimensions of human existentialism, and in particular, the social aspect of behavior, are influenced by the increasing spread of modern technologies [8]. On the other hand, information technology can be used as a powerful tool for improving the quality and efficiency of employees. Perhaps this is the reason why information technology is the most important factor in increasing productivity and reducing costs. Therefore, it can be concluded that the use of information technology in an organization is not a choice, but a necessity. The condition of doing any job and establishing any kind of communication depends heavily on information technology. This, on the other hand, increases the speed and quality of affairs and, on the other hand, affects organizational performance and increases the speed and success of the organization in the field of competition [9].

One of the most important factors in using day technologies is the user's feelings when working with computers, spending time and learning to learn, having a knowledgeable specialist in the field of information and communication technology in the educational institution [10], age, gender, education level, field of study, culture, previous experiences with computer, personal computer, and attitude toward the computer [11].

On the other hand, barriers such as lack of continuous access to computers and the Internet, lack of time, financial costs [12], inadequate infrastructure and technology constraints, such as bandwidth, hardware and software facilities, inadequate training, population density, and dispersion, the problem of ICT in the educational system is also lacking on the Internet [10].

Information technology can be considered as an aid to and facilitator of health services in various aspects. Because information and communication systems have provided an area for providing health services that no longer require the provision of these services to be limited in specific and

permanent places; and the development of communication tools has provided the possibility of providing primary health services to people's lives; and it provides the opportunity to participate in the work activity and to have a more satisfying social life and leisure time. Man uses information technology with appropriate training methods, extensive facilities such as communication, entertainment, doing things that they have not already been able to do. And will have access to their needs. This is a great help to spend on this period with better physical, psychological, and social health [13-15]. The increasing growth of information technology affects the health sector as well as other sectors [9]. So that the use of these systems has a direct impact on reducing clinical adverse events, medical errors, medical errors, improving patient safety, reducing the workload of staff, facilitating medical research, improving service quality, improving care and managing care [16-17]. Because the application of this technology in addition to physical facilities, is closely related to the attitude and attitudes of individuals, there is also little research on the link between technology application and attitude towards health. To emphasize the importance of the benefits of these tools in promoting future health, the present study was conducted to assess the use of ICT and reduce the rehabilitation process [2].

METHODS

This research was a descriptive-analytic, two-way, pre-and post-type study. The effect of rehabilitation centers services on the elderly's quality of life in two groups (case and control) was recorded by recording the data for samples in, one month and three months after the study. Participants of the study were older people referred to a rehabilitation center in Iran. Finally, 38 elderly people referred to the rehabilitation center in 2016 - 2017 were selected by the available sampling method.

The number of samples was taken using the same research with a probability of 50% error and 90% chance of testing, and considering the drop, 19 people in each group (case and control) were considered. The subjects who had the criteria for entering the study were selected by convenience sampling and randomly assigned to the relevant groups. The criteria for entering the study in the case group, including the age of 60 and above were the coverage of comprehensive rehabilitation services at daily centers, the ability to communicate in response to the questionnaire. Excluded criteria in the case group were associated with acute disorders and illness during the course, coverage of services, not participating in more than a third of the rehabilitation programs.

It should be noted that the included and excluded criteria for the control group were similar to the case group, except for items related to receiving services. In this study, the rehabilitation package is meant to be a collection of rehabilitation services, which was communicated by the Welfare Organization to the service providers, according to the needs of the individuals and based on the diagnosis of the rehabilitation center.

The part of the service of rehabilitation center that the recipients used was as follows: social skills training in

aging, organize classes for teaching healthy lifestyle books at aging, memorable sessions, holding religious classes, holding free painting classes, doing sports exercises and providing care services.

The method of implementation of the study was that after approving the proposal and obtaining the consent of the Ethics Committee from the University of Social Welfare, with the introduction of the letter to the comprehensive center for the rehabilitation of the elderly was referred.

Subsequently, after making necessary explanations and obtaining permission from the central authorities, the subjects of each group (case and control) were selected and included in the relevant groups if they had criteria for entering the study.

The case group was a group of older people who underwent rehabilitation programs and used an old-age package for three months.

The control group included those who were temporarily placed on the waiting list to receive the necessary services after the end of the study due to the lack of adequate capacity for the center to provide services to all registered individuals.

The study tools are SF-36 quality of life and demographic questionnaires. The questionnaire was distributed one month before, and three months after treatment in both groups. Quality of Life Questionnaire (SF-36) is a well-known public tool that has been translated into many languages,

Including the Persian language. The questionnaire has been prepared by the International Organization for the Study of Life-Longer Life and includes 36 questions in two main physical and psychological dimensions that measure eight health-related subscales. Ware and Gandek verified the reliability and validity of this questionnaire.

Reliability coefficient in 7 subscales was desirable, and from 77-95% widespread, and only in the dimension of vitality was 65%.

The data were analyzed using SPSS-22. Also, descriptive and inferential statistical methods, including frequency distribution table, mean and standard deviation, and one-way ANOVA with repeated measurements and correction of Greenhouse-Geisse were used to achieve the research objectives.

It should be noted that in each of these tests, the significance level of 0.05 was considered and ethical considerations based on the codes of the 26 departments of research and technology of the University of Welfare and Rehabilitation Sciences were fully observed.

Medical information technology and elderly health programs

Human resources are the primary target audience for information technology. Therefore, education and cultural development are essential for the development of information technology to promote the scientific and intellectual development of the community. Awareness and increasing the skill of medical professionals and raising awareness and creating social acceptance for the

benefit of services provided at the national and regional level is indisputable. Information technology in elderly health programs is also used to make the elderly receive the best service at the lowest possible time. The computer plays a decisive role in the health and treatment of older people. Filling leisure time, connecting with friends and relatives, socializing, enhancing mental motivation, promoting mental health, and informing are the benefits of the computer. In advanced societies, most of the affairs of the elderly include communication, information, buying and selling, access to information and health services, amusements, and more is by using computers. Even though the elderly, for some reason, the largest group that does not use the computer and find it hard to use it. However, the use of this technology has had a positive effect on the lives of the elderly, so that the computer may have the most benefit for the elderly.

Another point is that the use of the Internet, for middle-aged and older people, helps to strengthen brain forces. The search on the web stimulates the decision-making and brainstorming part. This may even help to cope with age-related physiological changes that slow down the brain. According to recent research, WebCast can be added to the list of activities that keep the brain active and reduce the risk of developing anxiety caused by aging.

Information technology offers more ways to compensate for the elderly's physical inferiority, such as voice or motion control systems, voice mail, and so on. Also, older people, special settlements for the elderly and smart homes are designed to provide mental health and health care. These settlements are part of the city, enjoying urban amenities and not resembling older people. But they have the same level of quietness and tranquility. In these settlements, the traffic and commuting of cars are more controlled, and the availability of recreational facilities-special sports for the elderly is very high. Other measures in this area are digital homes or smart homes that are tailored to the needs of the elderly. For example, if an older person is suffering from a stroke in the bathroom, the hospital emergency medical center will be immediately informed. The kitchen stove is designed for people who are even a problem with Alzheimer's and forgetfulness, and the electrical power of the rooms is such that it can easily be found even with visual impairment.

Another work that has provided information technology for the elderly is equipping the health centers of different countries with technology laboratories. These laboratories facilitate the diagnosis of the disease and its symptoms and the implementation of therapeutic procedures for patients, especially the elderly and the disabled, without the need for their physical presence in the treatment site. Another feature of information technology for the elderly is the creation of a robust database of older people, which contains information such as diseases, strategies, insurance; care needs, rehabilitation needs, and so on.

Statistical analysis overview

Descriptive analysis was used to describe the demographic characteristics of the sample. Also, a series of independent t-test was used to compare the experiment and control

groups at baseline, one month and three months after the treatment. SPSS (version 22) used to analyze the data.

Findings

According to Table 1, the mean age in the case and control groups was 67.22 and 69.13, respectively. T-test showed that there was no significant difference between mean age in both case and control groups ($P = 0.784$). Also, there was no significant difference between the two groups in terms of gender and educational level before the study.

Table 1: Demographic data

	Variables	Case		Control	
		Number	Percent	Number	Percent
Age	60-70	9	56	8	52
	71-80	6	32	6	32
	81-90	4	12	5	16
Gender	Male	11	56	13	64
	Female	8	44	6	36
Education	Illiterate	12	74	12	74
	Below Diploma	6	22	6	22
	Diploma	1	4	1	2
Total		19	100	19	100

Based on Table 2, the mean score of quality of life in the case group at the onset of the intervention was 33.54, which increased to 48.68 and 69.48 after one month and three months later. Also, according to the figures in this table, the mean score of quality of life in the control group was 34.63 before the intervention, 41.44 one month and 54.26 three months before the intervention.

Table 2: Comparison of mean quality of life in both case and control groups

	Variables	Case		Control		T	df	P
		Mean	SD	Mean	SD			
Quality of life	At the beginning	33.54	18.12	34.63	14.52	-0.221	32	0.877
	One month later	48.68	14.02	41.74	15.32	3.21	32	0.022
	Three months later	69.48	8.47	54.26	6.61	6.40	28	0.001

As can be seen, the quality of life of the elderly in the control group, in comparison with the case group, did not increase significantly in this period. The results showed that at the beginning of the study, the difference between the mean scores of quality of life in the two groups was not significant (0.877), but it was significant at one month and three months after the study ($P = 0.022$, and $P = 0.001$ respectively). The results also showed that the mean scores of elderly patients' quality of life in the case group increased three months later than the control group, which was significantly higher and significantly higher than the starting position and one month after study (0.001).

DISCUSSION

Information technology for the elderly can be considered as helping and facilitating health services in various aspects. Because information and communication systems

have provided an area for providing health services that no longer require the provision of these services in specific and permanent places; and the development of communication tools have provided the possibility of providing primary health services to people's lives, and provides the opportunity for the elderly to participate actively as a useful citizen in their work and to have a more satisfactory social life and leisure time. Older people, if they learn how to use information technology with appropriate training methods, have a wide range of facilities such as communication, entertainment, doing things that they have not previously been able to do, and have access to their needs. This is a great help to spend on this period with better physical, psychological, and social health.

The aim of this study was assessing the quality of life of participants during the rehabilitation at the Rehabilitation Center. In this research, people aged 60-70 had the highest population (58%), while the group of 71-80 and 81-90 years old were ranked second and third respectively, but the elderly were 90 years or more, and they did not participate in the study. In other words, they did not go to the center for daily services. However, the results of the 2012 Population and Housing Census in Iran indicate that the population ratio of age groups of 90 years and older (compared to the above-mentioned age groups) (12.5% and population growth rate at the age group has been more likely to be older than the other age groups from 1996 to 2006. Therefore, the reasons for not using it or the barriers to referring to this age group to receive daily rehabilitation services need to be studied [18].

Of the elderly participants in the study, 64% were male and 36% were female (in this study, the number of men was approximately 1.5 times that of women), while the general results of population and housing in 2006 revealed the gender ratio of the country's population, which represents the number of men per the percentage of women is 5/111, and this ratio is 1/107 in the city and 5/119 in the village [18].

According to the results of previous studies (Nodehimogadam & Ehsanifar, 2006) that reported the incidence of disability in women [19], the reasons for the lack of interest of the elderly or, perhaps, the neglect of families in the empowerment of older women should be further investigated. Of the participants, about 74% were illiterate, 22% had below diploma, and only 4% had a diploma.

Given that according to the Census of Population and Housing in 2012, 67.4% of men over 65 and 86.2% of women are 65 years of age and 78% of the population aged 65 years and older are illiterate, and only 7.1% of the population had high school education and more [18]. It can be concluded that the population structure was relatively similar in terms of educational level with the aging population of the country.

The results of Table 2 show that the service package mentioned above has increased the quality of life of the elderly in the sample group compared with the control group. In this regard, studies are consistent with the results obtained in this study, which is discussed below. The

results of the Chui study (2006) show that participation in recreational and educational programs can reduce the rate of depression in older people with daycare services [20].

Hunter (1992) in a study examined the relationship between the daily centers and the quality of life of the elderly and reported that the programs of these centers promote joining and thinking power in the elderly, and make the elderly consider themselves a productive part of society [21].

Also, in the study of Femia et al. (2007), in which the impact of daily centers programs on the behavioral and mental symptoms of elderly patients with dementia was investigated, the results of

the services of these centers indicated the reduction of symptoms related to dementia in the elderly [22].

In the study of Day and Rasmussen (2004) who systematically reviewed existing scientific literature on the impact of the services of the elderly specialist group on the health status of the elderly, the positive impact of community-based rehabilitation services and public services including assessment, treatment, rehabilitation and clinical counseling (observed) [23].

As stated, the mean quality of life scores of the two groups was not meaningful before receiving services from the center, but after receiving, the quality of life of older people improved. This is by the results of the study of Klein et al. [24].

Other studies that are partly consistent with the current study were Andersson et al. (2008) found that in the elderly over the age of 75 who received well-being empowerment assurances and programs, physical constraints had diminished, and they felt self-esteem was better and higher [25].

Finally, including internal studies that are partly compatible with the present study, Rahimi and Ahmadi's studies have been emphasized in the results of both studies on the effectiveness of the services of these centers on daily activities and the quality of life of the elderly [26, 27].

Also, the results of the study, which were conducted to evaluate the effect of daily rehabilitation center's programs and care services on elderly depression, showed that using these programs can reduce depression in the elderly [28].

The findings of the present study showed that during the three months of life quality of life of both groups increased, but in the elderly who benefited from the services of the center this increase was much more significant; in both positions one and three months after the study, the increase in mean of quality of life is significant. The results showed that the service package of daily centers in the short term (one month after the study) improves the quality of life, and given that the mean scores three months after the case study were more than two initial stages (study start) and mid (one month after study); therefore, the effects of these services become more evident over time (3 months after the study). Summary of the results of previous studies have been conducted on patients, and non-interventional subjects and most of them indicate that daycare centers improve social relationships, quality of life, mobility,

and increase happiness and life expectancy and reduce depression. These are the same results that were repeated in the present study and found that providing these services at the center of daily aging improves the quality of life of the elderly.

Therefore, it is expected that these services can be used as an effective and complementary method, along with other common interventions, as well as non-pharmaceutical interventions for improving the quality of life in the elderly. According to the findings of this study and previous studies, it can be concluded that the services of daily centers of the elderly can increase the capabilities of the elderly and, consequently, their quality of life.

CONCLUSION

The findings of the present study, while confirming the research hypothesis, showed that the services of daily centers in the form of a package of services of the Welfare Organization could improve the quality of life of the elderly; therefore, using a package of services and participation of elderly people in social activities, sports, recreation and leisure activities as non-drug and non-invasive interventions is useful in improving the quality of life of elderly people. Awareness of the results of this research can help managers and officials of the daily elderly centers as well as service providers in designing and implementing a comprehensive care plan that meets the needs and expectations of the elderly of the daycare centers. Therefore, it is suggested that further studies be carried out to determine the primary needs of the elderly and the common causes of their referral to daycare centers. Due to the limited capacity of the center, the number of samples was limited, and inevitably it was necessary to examine the more varied variables with difficulty; therefore, future studies are proposed at a broader level and with a more significant number of examples.

REFERENCES

- [1] Farajollahi M, Zarif Sanay'ei N. [Information and communication technology based education in higher education]. *Education Strategies in Medical Sciences*. 2010; 2(4):167-71. Persian.
- [2] Valasidou A, Bousiou-Makridou D. The impact of ICTs in education: the case of University of Macedonia students. *Journal of Business Case Studies (JBCS)*. 2011;4(3):29-34.
- [3] Atay S, Arıkan D, Yılmaz F, Aslantürk N, Uzun A. Nursing and midwifery students' attitudes to computer use in healthcare. *Nursing Practice Today*. 2015;1(3):147-54.
- [4] Sattari S, Namvar Y, Hajnazari Y. [A Study of the Relationship between Familiarity and use of ICT, and High School Students Academic Achievement in Haris]. *Journal of Information and Communication Technologies in Educative science*. 2012;3(2):85-103. Persian
- [5] Shami M. [Knowledge, attitude and application of computer by Bachelor Level Nursing students]. *Journal of Institute of Medicine*. 2013;34(2):21-7. Persian
- [6] Sajadi FS, Shokoohi M, Kakoei S, Sheikhi F. [Evaluation of skills and use of computer and internet among

- professors, postgraduate and undergraduate students in Kerman, Iran]. *Strides in Development of Medical Education*. 2013;10(2):166-74. Persian
- [7] Alemán JLF, de Gea JMC, Mondéjar JJR. Effects of competitive computer-assisted learning versus conventional teaching methods on the acquisition and retention of knowledge in medical surgical nursing students. *Nurse Educ Today*. 2011;31(8):866-71.
- [8] Maleki S, Sanisales Z. [The impact of E-learning on creativity and learning in physiology course in nursing students of Shahrekord University of Medical Sciences]. *Future of medical education journal*. 2015;5(4):25-9. Persian
- [9] Achim Na, Al Kassim A. Computer usage: the impact of computer anxiety and computer selfefficacy. *Procedia-Social and Behavioral Sciences*. 2015;172:701-8.
- [10] Zamani Manesh H, Khorasani A. [Effect of using educational, management, executive and motivational solutions on information and communication technology application in medical sciences field]. *Education Strategies in Medical Sciences*. 2012;4(4):203-10. Persian
- [11] Ayatollahi J, Ayatollahi F, Bahrololoomi R. [Using the internet among dental students in Yazd]. *Dent Res J (Isfahan)*. 2010;7(1):7-11. Persian
- [12] Maleki Z, Goudarzi M, Mohtashami L, Faghihi B. [Knowledge and Attitudes of Dental Students and Academic Staffs Towards Internet Usage in Dental Training In Shahid Behsheti University of Medical Sciences]. *Journal of Dental School Shahid Beheshti University*. 2010;28(1):40-6. Persian
- [13] Zabed Ahmed, SM. 2013. "Use of electronic resources by the faculty members in diverse public universities in Bangladesh." *The Electronic Library*. 31 (3):290-312.
- [14] Kwadzo, Gladys. 2015. "Awareness And Usage Of Electronic Databases By Geography And Resource Development Information Studies Graduate Students In The University Of Ghana." *Library Philosophy and Practice*..
- [15] Kwafoa, Paulina Nana Yaa, Imoro Osman, and Paulina Afful-Arthur. 2014. "Assessment of the use of electronic resources among administrators and faculty in the University of Cape Coast ".
- [16] Lahti M, Hätönen H, Välimäki M. Impact of e-learning on nurses' and student nurses knowledge, skills, and satisfaction: a systematic review and meta-analysis. *Int J Nurs Stud* . 2014;51(1):136-49.
- [17] Miller L, Stimely M, Matheny P, Pope M, McAtee R, Miller K. Novice nurse preparedness to effectively use electronic health records in acute care settings: Critical informatics knowledge and skill gaps. *Online Journal of Nursing Informatics (OJNI)*. 2014;18(2.)
- [18] Statistical center of Iran. Findings of 2006 national population and housing census. Presidency of the I.R.I, Vice presidency for strategic planning and supervision. Tehran: Statistical center of Iran; 2007.
- [19] Nodehimogadam A, Ehsanifar F. [The Survey Abnormal Physicalmotor Elderly Respect to Center of Rehabilitation Organization Welfare of Tehran (Persian)]. *Iranian Journal of Ageing*. 2006; 1(2):125-131.
- [20] Chui KC. Participating leisure and recreational activities and depressive symptoms among Chinese elder people residing in institutions [PhD thesis]. Hong Kong: The University of Hong
- [21] Hunter S. Adult day care: Promoting quality of life for the elderly. *Journal of Gerontological Nursing*. 1992; 18(2):17-20.
- [22] Femia EE, Zarit SH, Stephens MAP, Greene R. Impact of adult day services on behavioral and psychological symptoms of dementia. *Gerontologist*. 2007; 47(6):775-88.
- [23] Day P, Rasmussen P. What is the evidence for the effectiveness of specialist geriatric services in acute, post-acute and sub-acute settings. *New Zealand Health Technology Assessment*. 2004; 7(3):1-149.
- [24] Resnick B, Luisi D, Vogel A. Testing the Senior Exercise Selfefficacy Project (SESEP) for Use with Urban Dwelling Minority Older Adults. *Public Health Nursing*. 2008; 25(3):221-34.
- [25] Andersson M, Hallberg IR, Edberg AK. Old people receiving municipal care, their experiences of what constitutes a good life in the last phase of life: A qualitative study. *International Journal of Nursing Studies*. 2008; 45(6):818-28.
- [26] Ayubi A. [The Effect of Aging Health Care Package Center of Vitality Elderly Yazd on Quality of Life and Activities of daily Living Elderly women (Persian)] [PhD thesis]. Tehran: University of Social Welfare and Rehabilitation Sciences; 2013.
- [27] Rahimi M, Fadayevatan R, Davatgaran R. [Effectiveness of Day Care Services of Karaj Kahrizac Rehabilitation Center on Activities of Daily Living among Older People (Persian)]. *Iranian Journal of Ageing*. 2011; 8(3):7-16.
- [28] Gol Karami S, Mobaraki H, Kamali M, Farhodi F. [The effect of empowerment programs on geriatric depression in daily rehabilitation Farzanegan center of khorramabad city (Persian)]. *Modern Rehabilitation*. 2013; 6(4):65-70.