

e-Health Literacy in Ageing

Anabela Martins

Escola Superior de Tecnologia de Coimbra
Rua 5 de Outubro
3046-854 Coimbra
00351 239 802 430
anabelacmartins@estescoimbra.pt

Isabel Andrade

Escola Superior de Tecnologia de Coimbra
Rua 5 de Outubro
3046-854 Coimbra
00351 239 802 430
imandrade@estescoimbra.pt

Ricardo Pocinho

Escola Superior de Tecnologia de Coimbra
Rua 5 de Outubro
3046-854 Coimbra
00351 239 802 430
pocinho@estescoimbra.pt

Pedro Belo

Escola Superior de Tecnologia de Coimbra
Rua 5 de Outubro
3046-854 Coimbra
00351 239 802 430
pedrobelo@estescoimbra.pt

ABSTRACT

Health literacy and e-health literacy, increasingly used to empower citizens, are crucial in the use of health services, as that can influence users in adopting preventive measures and making informed decisions in the management of their disease / health. In this study we assessed the knowledge, skills and perceived capacity in the use of electronic sources for the management of health problems, in older people. The results indicate that age is associated significantly with e-health literacy on a negative way ($p < .01$), and a predictive model of health e-literacy ($F_{(3,54)} = 10.5$; $p < .01$) explained 36.9% of e- health literacy ($R^2 = .369$). This study points to the need to maximize concerted strategies to promote health literacy and e-health literacy thus giving the elderly equal opportunities to make healthy choices to increase health and wellness, towards a healthy aging.

Categories and Subject Descriptors

[Applied computing]: Health care information systems

General Terms

Measurement, Experimentation, Theory.

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Keywords

Active Ageing, e-Health Literacy, Health, Education

1. INTRODUCTION

Currently, due to the economic and financial depression, health systems face numerous barriers in regard to the communication of health information, which reflects on different populations. Therefore, the adoption of new roles by the health professionals to face the growing array of the users' needs in health information, the importance of implementing an approach patient-centred and the adoption of e-health approaches have become urgent and fundamental [1]. Particularly in the elderly population, which has numerous weaknesses and needs that should be especially addressed, it is urgent to provide health education to promote active ageing and to prevent consequences of chronic diseases [2]. Because the elderly population is growing exponentially, the use of new technologies/internet became central in order to provide a set of online resources for the elderly, in health education in general, and in health literacy (HL) in particular [3][1].

This type of intervention has facilitated the learning throughout the life of the elderly, focusing on health information and, at the same time, on new technologies [4]. Nowadays improvements are needed in the sophistication of health education strategies, and to pursue this goal, the electronic HL, e-health literacy (e-HL), through the use of new technological resources in health

education programs, can be a powerful tool to enhance HL in different populations [5].

2. e-HEALTH LITERACY

The e-HL is defined as "the capacity to obtain, process, understand and evaluate health information from electronic sources and apply the knowledge acquired to solve a health problem", encompassing literacy concepts in general and HL, health education, scientific literacy and computer skills in particular. It is undoubtedly a flexible, inexpensive and easily adaptable approach which the various health institutions should consider [3].

Although the e-HL is a relatively new concept in the field of education programs for health in populations, it has shown good results in increasing HL, and has been gaining an important role in communication and health promotion, and also on disease prevention in the elderly [4]. Several studies on e-HL programs in the elderly population have shown an increased ability to manage their own health problems as well as their daily activities using these information technologies (IT). The internet has proved to be an important resource for this population in the search for information on health, participation in free programs available online for self-management of chronic diseases, the search for support groups dedicated to physical and mental health and exercise programs, and also, as a way to communicate with the different sectors of health care and community health service providers [3]. Despite the use of information and communication technologies in healthcare being seen as essential to the quality of (low-cost) HL, some authors have found the implementation of e-HL initiatives to be problematic, because some contextual factors negatively influenced the benefits [4][5].

The efficacy of the various e-HL programs is subject to changes from one context to another, and between each elderly population, or from one older person to another. Lack of information / education for the use of new IT among older people has been consistently identified as a major obstacle to enhance e-HL, through the use of computers and internet [6]. Factors like motivation, literacy, or inter-institutional partnerships are also important for the success of programs [1]. But, let's not forget that the majority of the older people are characterized by a high level of functional disability and suffer from social isolation, besides having limited financial resources. In a recent study, Xie [4] concluded that the use of the internet tends to be lower among

older people of lower socioeconomic status. Other studies have shown that factors such as age, qualification, social and financial resources and ethnic minorities appear to be closely related to how the elderly make use of IT. Thus, the oldest older people, those with less qualifications, less social and financial resources, and those belonging to ethnic minorities, are the ones that use less computer / internet [3]. Also, living in social isolation and having deteriorated physical and mental health conditions seems to negatively influence the use of new technologies by older people [4]. Choi and DiNitto reported that one of the factors representing the main barrier to the use of IT is related to the cognitive decline associated with other mental deficits / cognitive and attitudes, such as anxiety on computer use and the perception that the technology is not useful for the "old" [4]. Elderly people also reported other reasons for not using IT, such as the cost of computer or other equipment, functional disabilities such as arthritis and joints' pain, visual deficits, ergonomic barriers, low computer literacy and the influence of their beliefs about their ability to use computers / internet, as well as overall self-efficacy ("too old to learn new stuff"). Beyond that, concerns about security and privacy on the internet, and the use of other technologies have proved to be important [4].

3. HEALTH EDUCATION PROGRAMS

The development of health education programs (e-health) for seniors is increasing, including basic skills for computer utilization and on access to health information sources, based on the fact that it has been reported in the literature that education regarding the use of IT for the elderly translates into positive outcomes in HL and in the ability to browse the internet sites about health education [2] [3]. Because older people have not only low HL, but also low literacy when it comes to new IT, education programs for health should include and focus the interventions on both HL and e-HL, in order to enhance the efficacy [2]. It's important to keep a lifelong education for the well-being of the older people [4]. Therefore, to enhance the interest of the elderly in the search of new knowledge and health information through the use of internet or other IT, are goals to be achieved.

In sum, HL and e-HL are increasingly being used to empower citizens [7], as they are crucial in the use of health services, besides influencing users in their health management. However, the Portuguese elderly population is characterized by a low level

of (functional) HL and in Portugal is still unknown the relationship between e-HL and the impact of health promotion programs on ageing populations [8].

Therefore, the aim of this study was to assess the knowledge, skills and perceived capacity in the use of electronic sources by older people for the management of their health problems and the role of Age, Experience using internet and Education level to explain the e-HL. Also, a predictive model for e-HL was tested using the Linear Regression.

4. METHODS AND STATISTICAL ANALYSIS

Norman and Skinner [9] developed a scale of e-HL (e-HEALS), which has been applied in various population groups and translated into several languages [10][11]. Although it was originally validated for adolescents and young adults, this scale has been used to measure e-HL in the elderly. It consists of eight items; each item scored on a Likert scale of 5 points and has revealed high levels of internal consistency (Cronbach α of 0.88). Higher scores are associated with higher levels of e-HL [11]. In this study the authors evaluated the association between knowledge (e-HL) through the use of the Portuguese version of the e-HEALS, and, age, experience in using the internet and the level of education. The study was descriptive and exploratory, with information collected in a single moment, through interviews by questionnaire administered to 86 subjects (n= 60, 69.8% female; n= 26, 30.2% male), aged at least 57 and maximum of 88 years (M = 67.36, SD = 7.23), attending two senior Academies in Coimbra, Portugal. Statistical analysis was performed using IBM-SPSS statistics, version 19.

5. RESULTS AND DISCUSSION

Although e-HEALS scale was originally validated for a population of adolescents and young adults aged 13 to 21 years (N = 664), Choi and DiNitto have also used it to measure the level of e-HL in older adults [13]. In our sample the Cronbach's α =0.93 which suggests a very good consistency [12].

Analyzing the results, the association between the e-HL and Age, Education level and Experience in using internet showed significant results ($p < .01$) and a positive relation between e-HL and Education Level and with Experience in using internet. A

negative correlation between e-HL and Age was assessed ($p < .01$). These associations are presented at Table 1.

		Age	Education level	Experience in using internet
e- Health Literacy	r	-.625	.384	.349
	p	.000**	.001**	.004**

Table 1. Relation between e-Health Literacy with Age, Education level and Experience in using internet (Pearson Correlation).

** $p < .01$

A Model of Linear Regression was tested to analyse a predictive model for e-HL, in order to understand how the model composed by Age, Experience using internet and Education level can explain the e-HL, as seen in Table 2.

Table 2. Predictive Model for e-Health Literacy (Linear Regression).

	R ²	F	B	SE	Beta stand.
1.Education level			.010	.021	.072
2.Age	.369	10.508**	-.038	.009	-.609**
3.Experience in using internet			-.008	.032	-.043

** $p < .01$

The results of the predictive model of e-HL show that the 3 predictors (Age, Education level and Experience in using internet) together can explain 36.9% of e-HL ($R^2 = .369$). Analysing the standardized Beta values, Age is the better predictor of e-HL (Beta stand= -.609, $p < .01$).

To analyse the effect size, a General Linear Model (Univariate) was tested. Estimates of effect size of Age on e-HL showed a $hp^2 = 0.689$, that indicated a large effect. So it seems that was well estimated the degree of association for the sample, so the number of participants are enough [12].

Low levels of education are associated, often, with lower socio-economic status, which leads to a lack of financial and social resources of the elderly in getting contact with internet [3].

Consequently, it leads to lack of experience with computer resources as well as a decrease in cognitive self-efficacy and perceptions proactive to the use of new technologies for searching for answers to their health needs [4]. So, to enhance the e-HL, we cannot restrict it to a simple transfer of knowledge about health. It is essential to educate, develop trust, promote the initiative demand and cultivate the concept of empowerment to better enable the elderly [14]. Kobayashi, Wardle and von Wagner [15] show that putting HL in the context of both cognitive and social functions, particularly when trying to better understand changes to HL skills in later life may help maintain cognitive function during ageing and this relationship is extended to HL.

6. CONCLUSION

The scale e-HEALS (Portuguese version) proved to be promising as a measure of e-HL in the Portuguese population. The high level of internal consistency is a guarantee of its usefulness in the characterization of e-HL over time, or to estimate the baseline, either outcomes of intervention programs. This instrument was designed to provide a management / simple analysis, with the potential to help identify those who may benefit from a strategic intervention. The results of this study suggest that to get positive goals in e-HL, institutions must provide formation and develop activities in IT in order to increase the confidence of older people (Age). There is the need of maximizing concerted strategies to promote HL and e-HL, in order of all older people have an equal opportunity to make healthy choices to increase health and wellness, towards a healthy aging.

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