Carla Santos
Elsa Rodrigues
Cristina Dias
Luis Cardoso
Organizadores

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Carla Santos, Elsa Rodrigues, Cristina Dias e Luís Cardoso

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Índice

MEASURING THE DIGITAL MATURITY OF HIGHER EDUCATION INSTITUTIONS: A FOCUS ON STAFF COMPETENCES 5

O IMPACTO DA LITERACIA ESTATÍSTICA NUM MUNDO ORIENTADO PARA OS DADOS 13

LITERACIA EMOCIONAL NA CRIAÇÃO E IMPLEMENTAÇÃO DE ITINERÁRIOS DIDÁTICOS EM PATRIMÓNIO CULTURAL POR FUTUROS PROFESSORES 21

IMPACTO DE SESSÕES DE PROMOÇÃO DE SAÚDE NA LITERACIA EM TRABALHADORES FABRIS 28

LANGUAGE LEARNING INFLUENCERS IN THE CLASSROOM: EXAMPLES BASED ON GERMAN FOR TOURISM COURSES 35

COMPETÊNCIA DIGITAL DOS PROFISSIONAIS DE SAÚDE NA FORMAÇÃO CONTÍNUA EM AMBIENTE E-LEARNING 42

LITERACIA EM SAÚDE DOS CUIDADORES INFORMAIS: CONTRIBUTOS PARA O PROCESSO DE CAPACITAÇÃO 53

O ENIGMA DA MALÍCIA NAS OBRAS DE PAULA REGO 61

LITERACIA ACADÊMICA PARA A ÉTICA EM PESQUISA: UMA CONTRIBUIÇÃO PARA A EDUCAÇÃO PROFISSIONAL E TECNOLÓGICA 68

LITERACIA EM SAÚDE- REPRESENTAÇÕES SOCIAIS DOS CUIDADOS PALIATIVOS NO ENVELHECIMENTO 75

LOBOS, LOBINHOS LOBÕES E OUTROS MONSTROS NÃO PAPÕES - UM PROJETO LITERÁRIO NA FORMAÇÃO INICIAL DE EDUCADORES E PROFESSORES DO 1.ºCEB 82

CASE STUDY – DREAMSHAPER PLATFORM IN THE ENTREPRENEURSHIP COURSE UNIT OF THE BUSINESS MANAGEMENT PROGRAM AT IPBEJA 89

INTELIGÊNCIA ARTIFICIAL E EDUCAÇÃO NA PRODUÇÃO CIENTÍFICA EM PORTUGAL NECESSIDADE DE (NOVAS) LITERACIAS? 96

PROMOVER A LITERACIA DE DADOS: A NOVA LINGUAGEM GLOBAL 103

CONTRIBUTO PARA O ESTUDO DAS ORAÇÕES COORDENADAS E SUBORDINADAS NO 2.º CICLO DE ENSINO BÁSICO 112

LITERACIA GERONTOLÓGICA - SABER ENVELHECER COM QUALIDADE DE VIDA NA CIDADE DE ÉVORA 122

FINANCIAMENTO COLABORATIVO "*CROWDLENDING*" ANÁLISE DAS PLATAFORMAS EM PORTUGAL 129

SAÚDE ORAL E AUTOPERCEÇÃO EM ADULTOS 136

EDUCAÇÃO E COMUNICAÇÃO: O CÍRCULO DE CULTURA COMO MÉTODO PEDAGÓGICO PARA A PROMOÇÃO DA LITERACIA MEDIÁTICA E CIDADÃ. 144

O PAPEL DO DOCENTE-INVESTIGADOR NO PROCESSO EDUCATIVO DO ALUNO 151

NARRATIVAS E PRÁTICAS DE LEITURA NA FORMAÇÃO DE PROFESSORES(AS): UM OLHAR DISCURSIVO 158

EFL PRE-SERVICE TEACHER EDUCATION IN THE ERA OF AI :REFLECTING ON CHALLENGES AND OPPORTUNITIES 164

LITERACIA POLÍTICA, CIDADANIA E EDUCAÇÃO PARA A CIDADANIA 172

PROMOVENDO A LITERACIA EM IA GENERATIVA: UM ESTUDO NO INSTITUTO POLITÉCNICO DE BEJA 178

LITERACIA GERONTOLÓGICA NA ABORDAGEM DO ENVELHECIMENTO EM AMBIENTES DIVERSIFICADOS 186

DIGITAL HEALTH EQUITY: AN ESSAY ON THE CHALLENGES OF THE DIGITAL AGE FOR OLDER ADULTS IN PORTUGAL 194

RACISMO ALGORÍTMICO E COLONIALISMO DIGITAL - LITERACIAS CRÍTICAS NA ERA DA INTELIGÊNCIA ARTIFICIAL 199

UMA VISÃO TRANSDISCIPLINAR DE INOVAÇÃO PEDAGÓGICA E INCLUSÃO NO ENSINO SUPERIOR 202

CASE STUDY – USE OF THE DREAMSHAPER PLATFORM IN THE WEB TECHNOLOGIES AND MOBILE DEVICES COURSE NO CURSO DE TECNOLOGIAS WEB E DISPOSITIVOS MÓVEIS 212

CAPTURA DE CARBONO 220

LITERACIA EM SAÚDE: CONCEPTUALIZAÇÃO 226

A LITERACIA ESTATÍSTICA EM ESTUDANTES DO ENSINO SUPERIOR: CONHECIMENTO VERSUS PERCEÇÃO 233

LITERACIA EM IA NAS BIBLIOTECAS DE ENSINO SUPERIOR 240

LITERACIA EM SAÚDE DOS ESTUDANTES DO ENSINO SUPERIOR FINALISTAS, NO ALENTEJO, NO ANO LETIVO 2022/2023: UM ESTUDO TRANSVERSAL 250

UM *QUIZ* COMO FERRAMENTA DE AVALIAÇÃO FORMATIVA 256

Digital Health Equity: An Essay on the Challenges of the Digital Age for Older Adults in Portugal

Ana Rita Medeiros[1], Cristof the Fernandes[1], Elzbieta Bobrowicz-Campos[1], Elsa Pegado[2] and Cristina Camilo[1]

[1] Iscte - Lisbon University Institute, Center for Psychological Research and Social Intervention (CIS-Iscte), Portugal
[2] Iscte - Lisbon University Institute, *Centre* for *Research and Studies in Sociology* (CIES-Iscte), Portugal

ABSTRACT

The use of digital technologies in the health sector is changing the way healthcare services are delivered, and how people manage their health. Digital health has the potential to positively impact health outcomes by improving the continuity, comfort, and celerity of healthcare processes, increasing access to healthcare services and information and therefore improving the quality of healthcare. However, digital health also carries the risk of generating and/or exacerbating health inequalities within vulnerable populations who have limited access or use of digital technologies and/or who have low levels of digital health literacy. This situation is common among older adults. In Portugal, according to Instituto Nacional de Estatística, in 2024, 39,7% of adults aged 65 to 74 did not use any equipment or systems connected to the internet. As older adults tend to rely more on healthcare, reduced adoption of digital technologies and insufficient knowledge or skills to use these technologies for health-related purposes may result in limited access to the benefits of digital transformation in healthcare, leading to their exclusion from this transformation. It is therefore fundamental to promote digital health literacy among the older population. However, to promote good levels of digital health literacy it is necessary to address existing inequalities in terms of digital access, skills and uses, considering the role played by sociodemographic factors other than age, such as socioeconomic status and education levels, in creating and reinforcing digital health inequalities. This essay aims to explore the challenges faced by older adults in Portugal in the digital age in terms of health. By overviewing the long-standing debate on the challenges and opportunities brought by Information and Communication Technologies (ICTs), we argue that to address low levels of digital health literacy among said population, it is crucial to address broader digital inequalities.

KEYWORDS

Older adults, digital transformation, digital health technology, digital health literacy, digital health equity

1. INTRODUCTION

The digital transformation in the health sector, which refers to the rapid development of digital technologies and their use in healthcare, has changed and will continue to change the way healthcare services are provided. From electronic medical records and online appointments to portable medical devices, digital technologies bring numerous benefits to healthcare services, and to healthcare professionals and healthcare users, via digital technology (Marques & Ferreira, 2020). However, to effectively use and benefit from these technologies for health-related purposes, people need to have specific knowledge and skills. Digital health literacy knowledge and skills go beyond competences encompassed by the concept of health literacy, namely traditional literacy competences, needed to access, understand and evaluate health information and to, based on that information, make decisions about one's health (Espanha et. al, 2015). Digital health literacy, in addition to traditional literacy skills, also requires competences in using digital technologies to access and evaluate health information and based on that, address health-related problems (Smith & Magnani, 2019). Considering the complexity of competences required, if digital health is to become the standard in healthcare services, it is necessary to ensure that all citizens can keep up with these innovations.

Older adults, whose digital skills (Lapa & Vieira, 2019) and health literacy levels (Espanha & Ávila, 2016) tend to be lower compared to younger age-groups, are especially at risk of exclusion from the digital transformation in health. Since older adults tend to be more reliant on healthcare, it is necessary to uncover the underlying causes and act on these inequalities. This essay, written in the scope of Time-To-Engage (LCF/PR/SR23/57000012), a project funded by the Social Observatory of the Spanish Foundation "La Caixa" and the Portuguese Foundation for Science and Technology (https://ciencia.iscte-iul.pt/projects/intentions-and-behaviours-of-using-digital-health-technology-by-older-adults-collaborative-research/1960), aims to explore the challenges posed by the digital age to older adults and how low levels of digital health literacy are connected to broader digital inequalities. Drawing on the long-standing debate on the challenges and opportunities brought by Information and Communication Technologies (ICTs), we argue that digital knowledge and skills are essential for digital health literacy. Therefore, to address the problem of low levels of digital health literacy among the population in question, and to achieve digital health equity, it is crucial to address the digital divide. We also reflect on the opportunities and challenges of the digital transformation in health for older adults, whose limited access and use of digital technologies and low levels of digital health literacy may result in limited access to the benefits of digital health, leading to their exclusion from this transformation.

2. DIGITAL HEALTH: CHALLENGES AND OPPORTUNITIES

2.1. Digital Health and the Digital Divide

As digital technologies are increasingly used to deliver healthcare services, digital health has been receiving growing attention in research across disciplines, such as Psychology, Education, and Sociology. Although the concept of digital health has been around for more than two decades, there is no consensus on the definition. As technology and its application to healthcare is evolving, the definition has also been evolving. Based on a systematic review of digital health definitions, Fatehi at al. (2020) propose that digital health is about "the proper use of technology for improving the health and wellbeing of people at individual and population levels, as well as enhancing the care of patients through intelligent processing of clinical and genetic data" (p. 71). Much of the interest in digital health strives from its potential to have positive impacts in health outcomes, by improving healthcare services delivery (OECD, 2019). As the use of digital health technologies has some undeniable opportunities for better healthcare, such as increased access to information, improved communication between healthcare users and healthcare professionals, as well as more personalized plans, it also carries the risk of creating and/or deepening existing digital inequalities. For example, technology can be a barrier if it limits access to individuals who lack the knowledge, skills or motivation to use them efficiently.

The debate over the opportunities versus the challenges brought by the dissemination of Information and Communication Technologies (ICTs is not a new one. The concept of Digital Divide emerged in the 1990s (van Dijk, 2005) and initially focused on access. Access, described as physical access to equipment and connection to the internet, was related to sociodemographic characteristics, such as income, level of education, age, gender and race, and to the availability, accessibility and affordability of technology options on the market (Van Dijk, 2017). The concept of digital divide has since evolved, conveying other issues related to the digital transformation, such as operational, formal, information and strategic skills for using the internet, and a reconceptualization of access to the full appropriation of technology (Van Dijk, 2017). A broader definition of access includes various stages to the full process of appropriation of technology, such as motivation and attitude, which precede physical access, competences needed for access and types of usage. Additionally, there is an emphasis on access to ICT as a continuous process evolving alongside technological innovations and market changes. The term second-level divide refers to the digital skills that users possess, which is correlated with the first-level divide (inequalities in access) and with differences in ICT use. The level of digital skills interferes with the ability to have positive results from the use of digital technologies. Thus, differences in uses and the results people obtain from the use of digital technologies are a third-level divide (Ragnedda et. al, 2017). Together the three-levels make the bigger picture of inequalities in the digital age.

In the context of the digital transformation in healthcare, where digital knowledge and skills play an important role, the second-level divide is especially concerning. The knowledge and skills required to benefit from digital health have been referred to as Digital Health Literacy (Norman & Skinner, 2006). Digital Health Literacy is measured through the ability to find, understand and use available health related information (Levin-Zamir et al., 2021). These sources can be the Internet and mobile or other technological devices, and include digital health records, online video appointments, and health-related applications. Digital Health Literacy is, thus, an extension of health literacy in the context of technology (Dunn & Hazzard, 2019). In this context, digital health literacy depends greatly on digital literacy (Souza et al., 2022). Digital or internet skills, according to van Deursen and van Dijk (2009, 2010, 2014), include: (1) operational skills, that is, basic skills in using the internet; (2) formal internet skills, which refers to navigation and orientation skills; (3) information internet skills, concerning the ability to fulfil information needs; (4) strategic internet skills, that is, the ability to use the internet to achieve goals; (5) communication and content creation skills.

Considering the impact of digital health literacy levels on health accessibility, adhesion to healthcare services, social participation, the exercise of civil rights in relation to health, health monitoring and knowledge about health resources and services, the digital divide constitutes a barrier to individual well-being and life quality (Souza et. al, 2022). Therefore, to address low levels of digital health literacy it is necessary to address questions related to digital access, uses and skills. Age, along with other socioeconomic and demographic factors, such as socioeconomic status and education levels, sex, geographical location and health status influence the digital divide. The same can be applied to levels of digital health literacy (Estrela et. al, 2022). Hence, to tackle the problem of digital health literacy levels it is important to address not only questions related to digital access, skills and uses, but also how it is influenced by sociodemographic and other factors.

2.2 Challenges and Opportunities for Older Adults in Portugal

In the context of a growing population of older adults and of public healthcare systems' difficulties in addressing age-related issues, digital health solutions offer great potential for improving healthcare services quality and efficiency. By enhancing users' involvement in their health management through digital health tools, such as mobile apps, wearable devices and patient portals, digital health has the potential to alleviate pressures on healthcare systems and improve access to care (OECD, 2024). Furthermore, integrating digital health technologies in preventive strategies can also improve healthcare solutions for older adults. For example, the use of wearable and health apps, allowing for real-time health data collection, can assist in preventive care, disease management and providing personalized health solutions, while telemedicine and remote monitoring technologies can expand healthcare accessibility to older adults who reside in remote or rural locations or who have reduced mobility (Daniels & Bonnechère, 2024). However, as discussed above, a proper use of digital health technologies that enables users to collect benefits from its use, depends on good levels of digital health literacy, which depend greatly on digital literacy levels.

Digital inequalities in terms of digital access, skills and uses largely remain and are partially explained by sociodemographic variables, such as age, sex, socioeconomic status and education levels, and geographical location. In Portugal, although adoption and use of digital technologies by older adults has been growing, these citizens still use it less than other age-groups. In 2024, 39,7% of adults aged 65 to 74 did not use any equipment or systems connected to the internet (INE, 2024). Together with less educated individuals, older adults are the most excluded in terms of digital access, skills and uses (Lapa & Vieira, 2019). According to a survey applied in Portugal in 2014, age and education levels explained levels of health literacy, with older and less educated adults scoring lower on the index compared to younger-age groups (Espanha and Ávila, 2016). Similarly, the results of a survey applied in 2019-2021 (Arriaga et. al, 2022) found a that together, age, sex, economic capacity to pay for medical examinations, education levels and professional status determine health literacy levels, with women, lower economic capacity and lower levels of schooling, in older age-groups having lower health literacy.

Hence, to counter this population group's risk of exclusion from the benefits of digital health, digital inequalities should be addressed and solutions aimed at improving digital health literacy levels should be promoted.

3. CONCLUSION

As digital technologies take hold of the health sector, digital literacy becomes essential to access health information and make decisions regarding one's health. The levels of digital health literacy are, thus, a pressing concern. Considering the critical role digital literacy plays in health literacy, we argued that, to promote good digital health literacy levels, it is necessary to address questions of access to digital technology and digital uses and skills. Due to constant technological innovation and the new learnings and competences it requires, inequalities in terms of digital knowledge and skills (the second-level divide) are the most pressing. However, access to digital technology is the first prerequisite for digital competences to be developed and for making of an effective, goal-oriented, use of these technologies. In Portugal, digital inequalities largely remain, and they are related to sociodemographic characteristics, such as age, socioeconomic status and education levels, and health status. Older age, for instance, is related to lower levels of digital skills and health literacy. Similarly, age has also been shown to predict levels of digital health literacy, with older age being associated with lower digital health literacy levels. Hence, digital health poses a greater challenge to older adults, who are at risk of exclusion from the digital transformation in health. Nevertheless, despite the challenges, we have also shown that digital health has potential benefits to older adults. However, to guarantee that these citizens can access the benefits of digital health technologies, it is necessary to promote good digital health literacy levels among them.

By drawing attention to the problem of low digital health literacy levels among older adults, we hope that this article alerts the need to empower older adults to be a part of the digital transformation in health. It argues that one way of empowering older adults and bringing them on board of the digital transformation in health is by addressing low levels of digital health literacy, and that, to do so, it is necessary to address digital inequalities, especially in terms of digital knowledge and skills. Finally, as age is but one of the determinants of digital health literacy levels, exploring the role played by other factors sociodemographic factors, such as economic status and education levels, can shed some light on the underlying causes and help define solutions for achieving digital health equity. This essay provides insights for future research and professional practice, by suggesting that, when looking for solutions for achieving digital health equity, not only digital health literacy levels, but also inequalities in terms of access, skills and knowledge, and uses, as well as sociodemographic determinants should be considered.

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