eHealth platforms for promoting active living: a scoping review protocol

Plataformas eSaúde para promover uma vida ativa: um protocolo de scoping review

Plataformas de eSalud para promover una vida activa: un protocolo de revisión de alcance

João Apóstolo
ORCID: https://orcid.org/0000-0002-3050-4264
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
Portugal Centre for Evidence Based Practice: A JBI Centre of Excellence (PCEBP), Portugal
E-mail: apostolo@esenfc.pt
Joana Bernardo
ORCID: https://orcid.org/0000-0003-3614-9061
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
E-mail: joanabernardo@esenfc.pt
Ricardo Loureiro
ORCID: https://orcid.org/0000-0001-6135-2278
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
E-mail: ricardoloureiro1@esenfc.pt
Elaine Santana
ORCID: https://orcid.org/0000-0002-5550-8018
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
E-mail: elainesantana@esenfc.pt
Filipa Margarida Duque
ORCID: https://orcid.org/0000-0002-0534-5812
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
Portugal Centre for Evidence Based Practice: A JBI Centre of Excellence (PCEBP), Portugal
E-mail: margaridaduquee@esenfc.pt
Carina Dantas
ORCID: https://orcid.org/0000-0002-9887-7622
SHINE 2Europe, Portugal
E-mail: carinadantas@shine2.eu
Filipa Ventura
ORCID: https://orcid.org/0000-0001-5722-5612
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
E-mail: filipaventura@esenfc.pt
Rosa Silva
ORCID: https://orcid.org/0000-0002-3947-7098
Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal
Portugal Centre for Evidence Based Practice: A JBI Centre of Excellence (PCEBP), Portugal
E-mail: rosacgsilva@esenfc.pt

Abstract
Introduction: In increasingly aging societies, the life course towards aging should be a positive experience supported by interventions for promoting healthy lifestyles, namely through social interaction. Technological advancements, such as eHealth platforms, are becoming increasingly available and may facilitate a more autonomous life and promote active and healthy living. Objectives: To map eHealth platforms designed and used to promote autonomous life and active aging. Methods: This scoping review will follow the JBI methodology for scoping reviews. Two independent reviewers will appraise the articles and extract and synthesize data. This review will include studies published in Spanish, English, and Portuguese, without any time restrictions. The following databases will be searched: MEDLINE (via PubMed), CINAHL Complete (via EBSCOhost), Scopus, Cochrane Database of Systematic Reviews (via EBSCOhost), SciELO, DART-Europe, CAPES, and MedNar. Results: This scoping review is expected to include studies addressing eHealth platforms that promote autonomous life and active aging. Conclusion: This scoping review will analyze and synthesize the available scientific evidence on using eHealth platforms to promote autonomous life and active aging. It may also be the basis for a systematic review and/or help identify gaps where it may be important to invest in the future.
Keywords: eHealth strategies; Personal autonomy; Healthy aging.

Resumo

Introdução: Perante uma população cada vez mais envelhecida, é essencial que todo o percurso de vida até ao envelhecimento seja vivenciado como uma experiência positiva para os indivíduos e sociedade, através de um conjunto de intervenções baseadas na promoção de estilos de vida saudáveis, onde a interação social é essencial. Por outro lado, o recurso a novas tecnologias, nomeadamente a utilização de plataformas eHealth, está em crescente disseminação, podendo ser associadas e facilitadoras no processo de apoio à autonomia individual e promoção de uma vida mais ativa e saudável. Objetivos: Mapear as plataformas de eHealth desenhadas e utilizadas na promoção da vida autónoma e do envelhecimento ativo. Métodos: Scoping review seguindo a metodologia proposta pelo JBI. Dois revisores independentes avaliarão a relevância dos artigos, a extração e síntese dos dados. Serão considerados, para inclusão nesta revisão, estudos escritos em espanhol, inglês e português, sem definição temporal, pesquisados nas seguintes fontes bibliográficas: MEDLINE (via PubMed), CINAHL Complete (via EBSCOhost), Scopus, Cochrane Database of Systematic Reviews (via EBSCOhost), Scielo, DART-Europe, CAPES e Mednar. Resultados: Com a realização desta scoping review, prevemos incluir estudos que associem as plataformas eHealth com a promoção da vida autónoma e o envelhecimento ativo. Conclusões: Esta scoping review irá possibilitar a análise e sistematização da evidência científica conhecida relativa às plataformas eHealth, na promoção de uma vida mais autónoma com vista ao envelhecimento ativo. Poderá igualmente suportar uma revisão sistemática, e/ou a clarificação de um conjunto de lacunas relativamente às quais poderá ser importante investir no futuro.

Palavras-chave: Estratégias de eSaúde; Autonomia pessoal; Envelhecimento saudável.

Resumen

Introducción: En sociedades cada vez más envejecidas, el curso de la vida hacia el envejecimiento debe ser una experiencia positiva respaldada por intervenciones para promover estilos de vida saludables, es decir, a través de la interacción social. Los avances tecnológicos, como las plataformas de eSalud, están cada vez más disponibles y pueden facilitar una vida más autónoma y promover una vida activa y saludable. Objetivos: Mapear plataformas de eSalud diseñadas y utilizadas para promover la vida autónoma y el envejecimiento activo. Métodos: Esta revisión de alcance seguirá la metodología del JBI para revisiones de alcance. Dos revisores independientes evaluarán los artículos y extraerán y sintetizarán los datos. Esta revisión incluirá estudios publicados en español, inglés y portugués, sin restricción de tiempo. Se realizarán búsquedas en las siguientes bases de datos: MEDLINE (a través de PubMed), CINAHL Complete (a través de EBSCOhost), Scopus, Cochrane Database of Systematic Reviews (a través de EBSCOhost), SciELO, DART-Europe, CAPES y MedNar. Resultados: Se espera que esta revisión de alcance incluya estudios que aborden plataformas de eSalud que promuevan la vida autónoma y el envejecimiento activo. Conclusión: Esta revisión de alcance analizará y sintetizará la evidencia científica disponible sobre el uso de plataformas de eSalud para promover la vida autónoma y el envejecimiento activo. También puede ser la base para una revisión sistemática y/o ayudar a identificar brechas en las que puede ser importante invertir en el futuro.

Palabras clave: Estrategias de eSalud; Autonomía personal; Envejecimiento saludable.

1. Introduction

Thinking about society today is factually different from what it meant in past centuries, and it is expected, and even desirable, that it will also be so in the future. The 21st century presents a respectable challenge for the development of societies worldwide, requiring a profound reflection on how they are organized (Dantas et al., 2019).

Over the past few years, social, economic, political, and cultural changes have compromised the structure of populations and how they navigate society (Bulger & Davison, 2018; European Comission, 2021). In a society deeply influenced by the phenomenon of globalization, in parallel with the digital transition, the several areas of theoretical, scientific, and technological knowledge are becoming increasingly interconnected, providing a progressive and continuous discussion by the several parties involved (Varela et al., 2020; Martins et al., 2018). Therefore, a set of demands is set forth, given their complexity, where everything changes rapidly on a global scale and scientific knowledge is produced and developed continuously and progressively, based on promising multidisciplinary networks (Biesta & Picoli, 2018).

Let us direct our interest to demographic changes, particularly population aging and its challenges, the relevance of the active aging process, and the digital health platforms, which contribute to social inclusion and promote individual health and well-being (Robins et al, 2018).

The pace of population aging has been particularly fast in recent decades, with an increase in the number of older adults (aged 65 years and over), a decrease in young people (aged 0-14 years) and working-age people (aged 15-64 years), and

an increase in life expectancy. In 2021, 20.8% of the population in the European Union was aged 65 and over (European Comission, 2021).

The human aging process has demanded particular attention from the scientific community due to its social, political, economic, educational, and health implications (Lima et al, 2016). This process tends to be increasingly longer and accompanied by physiological and biological changes associated with degenerative processes, whose negative impact is mainly felt on functional capacity (Martins et al, 2018). Well-being and autonomy can be compromised by the aging process, raising academic interest in identifying, analyzing, and discussing possible ways of minimizing the impact of these factors on their lives (Eckstrom et al., 2020) while encouraging more active and participatory citizenship of older people (Nunes, 2015).

In the face of demographic change, there is an urgent need for a global strategy that focuses on the challenges arising from human aging (Costa et al., 2021). Until 2030, the United Nations (United Nations, 2018) is committed to the Sustainable Development Goals (SDGs), especially goal 3, related to good health and well-being, and goal 11, focused on making cities and communities inclusive, safe, sustainable, and age-friendly by ensuring a better future for the entire population. These goals contribute to leveraging the relevance of active aging in today's societies.

Active aging is described as a concept applicable to both individuals and population groups, allowing people to realize their potential for physical, social, and mental well-being throughout life (Ayala et al., 2021), enabling their participation in society according to their needs, desires, and capabilities (Robins et al., 2018). According to the World Health Organization (WHO, 2015), this concept must be universal to promote and implement environments that allow individuals to overcome the challenges associated with this stage of life. The implementation of active aging allows overcoming the challenges of the increasingly aging population, allowing aging to become a positive experience for individuals, communities, and societies through a set of interventions aimed to optimize opportunities for health, participation, and security, based on the promotion of healthy lifestyles, physical activity, and social interaction (Varela et al., 2020; Liu et al., 2016). Thus, promoting and adopting healthier and participatory lifestyles is essential to prevent disability and promote well-being. Initiatives are needed to create healthy environments that promote healthy, participatory lifestyles and well-being.

The rapid development of information and communication technologies (ICTs) is an opportunity to improve efficiency and reduce costs in several sectors, such as the health sector, despite the challenges associated with these advancements (Stara el al., 2020; Scase et al., 2018). There has been an increase in the number of healthcare-related digital platforms that aim to help people adopt a healthier and more independent lifestyle, enhance their participation, and ensure their well-being (Holmen et al., 2020; Stara et al., 2020). These considerations are shared by the European Partnership for Innovation in Active and Healthy Aging, an initiative that aims to foster the innovative use of digital for active and healthy aging (Bousquet et al., 2020).

ICTs are expected to be linked to the triad of aging, social inclusion, and active participation, which is aligned with the implementation of Smart Healthy Age-Friendly Environments (SHAFE) (Sánchez-González et al., 2020). The focus should be on People, with citizenship and social interaction as key elements, and Places, such as houses, built environments, or community spaces. Thus, SHAFE bring many benefits to the well-being, participation, and active aging of all citizens (Staalduinen, 2020).

SHAFE aims to facilitate the creation of healthy and friendly environments for all ages through the use of new technologies, emphasizing the importance of People and Places in creating digital health solutions with better quality and accessible to all. Placing the Person at the center of the digitization process is crucial for implementing the strategy advocated by SHAFE (Dantas et al., 2019), particularly regarding the use of eHealth platforms.

WHO (2015) defines eHealth as the use of information and communication technologies in support of health. The concept covers several areas such as the education of professionals and individuals, disease surveillance and monitoring, and

more cost-effective (Sülz et al., 2021) and secure measures to monitor public health (Öberg et al., 2018). It has the potential to promote healthy lifestyles and improve the decision-making process of health professionals and individuals, the quality of health services, the access to medical information, and the communication in places where it was previously not possible (Scase et al., 2018)

The use of new technologies, namely the use of eHealth platforms, is increasing and can be associated with a reduction in the waiting lists for appointments and unnecessary visits to health services, leading to more effective and efficient health units and promoting health equity (Holmen et al., 2020; Stara et al., 2020).

Health equity is a priority in the agenda for sustainable development (Gómez et al., 2021). Its purpose is to improve the situation of disadvantaged groups by ensuring that all have access to necessary health care while addressing the underlying causes of social discrimination (Hosseinpoor, 2015) The scientific community recognizes that taking meaningful steps to achieve health equity is a moral imperative and may lead to other benefits such as improving the health and economic and living conditions of the populations and promoting active aging (Holmen et al., 2020; Stara et al., 2020).

Nevertheless, digital solutions are not the answer to all societal problems and challenges. Citizens of different age groups also need personal and social contacts and interaction. Still, digitalization, while not replacing this human need, may become a powerful vehicle to support people in meeting their needs and foster well-being, ultimately creating more equitable and participatory societies (Stara et al., 2020; Scase et al., 2018).

The literature consulted on the promotion of active aging revealed several studies on the planning and implementation of eHealth platforms. However, these studies vary according to their purpose, target population and how these platforms can be used, areas of intervention, and outcomes assessed. Thus, mapping eHealth platforms is urgent to systematize the information. A preliminary search for undergoing scoping reviews or scoping reviews' protocols on the topic under study was conducted in Medline (via PubMed), the Cochrane Database of Systematic Reviews, the JBI Evidence Synthesis, the Open Science Framework, and Prospero. The absence of results reinforce the development of the proposed scoping review to map and understand the extent and type of evidence on eHealth platforms to promote active aging.

Review questions

- Which eHealth platforms facilitate autonomous life and promote active aging?

- What are the age groups targeted by the eHealth platforms?

- What are the domains of intervention of these eHealth platforms (physical, emotional, cognitive, or social)?

- Which outcomes are assessed in studies that have implemented and evaluated these eHealth platforms?

Inclusion criteria

Following the JBI methodology for scoping reviews, the P (participants), C (concept), and C (context) mnemonic was applied to define the following inclusion criteria:

- Participants: studies involving people, regardless of age;

- Concept: studies with eHealth platforms, designed and/or created to promote autonomous life and/or active aging;

- Context: studies conducted in all contexts.

This scoping review will consider quantitative, qualitative, or mixed-methods studies. It will also include systematic reviews, depending on their objective and question.

Exclusion criteria

This scoping review will not consider studies addressing eHealth platforms exclusively for educating and assisting health professionals in decision-making, chronic or acute disease surveillance and monitoring, and access to person-directed

medical information.

2. Methodology

This scoping review will follow the JBI methodology for scoping reviews, which is in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

This scoping review protocol aims to map the available scientific evidence on the subject under study (Peters et al, 2020). According to Arksey and O'Malley (2005), who were pioneers in structuring this type of review, the following specific objectives justify this approach to evidence synthesis: (i) to map the information available in the literature; (ii) to determine the value of undertaking a systematic review, specifically whether it is feasible or relevant; (iii) to describe, summarize, and disseminate research findings, and (iv) to identify scientific areas where there may be research gaps.

2.1 Search strategy

A three-phase approach will be implemented to locate both published and unpublished studies. An initial limited search of MEDLINE (via PubMed) and CINAHL (via EBSCOhost) databases will be undertaken, to identify the text words contained in the titles and abstracts of relevant articles (first phase). The keywords/text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles will be used to develop a full search strategy (second phase). A full search strategy for MEDLINE database is detailed in Table 1. The search strategy, including all identified keywords and index terms, will be adapted for each included information source. The reference lists of all studies selected for inclusion will be screened for additional studies (third phase).

The databases to be searched include MEDLINE (via PubMed), CINAHL Complete (via EBSCOhost), Scopus, Cochrane Database of Systematic Reviews (via EBSCOhost), and SciELO. Sources of unpublished studies to be searched include DART-Europe, CAPES, and MedNar.

Table 1. Search strategies and quantity of retrieved papers, conducted on 5 June 2022 in MEDLINE (via PubMed).

Search	Query	Results
#7	("environment design"[MeSH Terms] OR "digital technology"[MeSH Terms] OR "telemedicine"[MeSH Terms] OR "internet based intervention"[MeSH Terms] OR "telenursing"[MeSH Terms] OR ("ehealth"[Title/Abstract] OR "ehealth intervention"[Title/Abstract] OR "ehealth program"[Title/Abstract] OR "digital health interventions"[Title/Abstract] OR "digital health"[Title/Abstract] OR "digital healthcare"[Title/Abstract] OR "digital health technology"[Title/Abstract] OR "telehealth"[Title/Abstract] OR "environment design"[Title/Abstract] OR "digital technology"[Title/Abstract] OR "telemedicine"[Title/Abstract] OR "internet based intervention"[Title/Abstract] OR "telenursing"[Title/Abstract] OR "digital health applications"[Title/Abstract] OR "mobile health applications"[Title/Abstract] OR "mobile applications"[Title/Abstract] OR "mobile health interventions"[Title/Abstract] OR "digital health services"[Title/Abstract])) AND ("healthy aging"[MeSH Terms] OR "active aging"[Title/Abstract] OR "active ageing"[Title/Abstract] OR "healthy ageing"[Title/Abstract] OR "aging well"[Title/Abstract] OR "ageing well"[Title/Abstract] OR "healthy strategies"[Title/Abstract] OR "healthy aging"[Title/Abstract])	207
#6	"environment design"[MeSH Terms] OR "digital technology"[MeSH Terms] OR "telemedicine"[MeSH Terms] OR "internet based intervention"[MeSH Terms] OR "telenursing"[MeSH Terms] OR "ehealth"[Title/Abstract] OR "ehealth intervention"[Title/Abstract] OR "ehealth program"[Title/Abstract] OR "digital health interventions"[Title/Abstract] OR "digital health"[Title/Abstract] OR "digital healthcare"[Title/Abstract] OR "digital health technology"[Title/Abstract] OR	72.704

	"telehealth"[Title/Abstract] OR "environment design"[Title/Abstract] OR "digital technology"[Title/Abstract] OR "telemedicine"[Title/Abstract] OR "internet based intervention"[Title/Abstract] OR "telenursing"[Title/Abstract] OR "digital health applications"[Title/Abstract] OR "mobile health applications"[Title/Abstract] OR "mobile applications"[Title/Abstract] OR "mobile health interventions"[Title/Abstract] OR "digital health services"[Title/Abstract]	
#5	"ehealth"[Title/Abstract] OR "ehealth intervention"[Title/Abstract] OR "ehealth program"[Title/Abstract] OR "digital health interventions"[Title/Abstract] OR "digital health"[Title/Abstract] OR "digital healthcare"[Title/Abstract] OR "digital health technology"[Title/Abstract] OR "telehealth"[Title/Abstract] OR "environment design"[Title/Abstract] OR "digital technology"[Title/Abstract] OR "telemedicine"[Title/Abstract] OR "internet based intervention"[Title/Abstract] OR "telenursing"[Title/Abstract] OR "digital health applications"[Title/Abstract] OR "mobile health applications"[Title/Abstract] OR "mobile applications"[Title/Abstract] OR "mobile health interventions"[Title/Abstract] OR "digital health services"[Title/Abstract]	43.702
#4	"environment design"[MeSH Terms] OR "digital technology"[MeSH Terms] OR "telemedicine"[MeSH Terms] OR "internet based intervention"[MeSH Terms] OR "telenursing"[MeSH Terms]	49.630
# 3	"healthy aging"[MeSH Terms] OR "active aging"[Title/Abstract] OR "active ageing"[Title/Abstract] OR "healthy ageing"[Title/Abstract] OR "aging well"[Title/Abstract] OR "ageing well"[Title/Abstract] OR "healthy strategies"[Title/Abstract] OR "healthy aging"[Title/Abstract]	9.721
# 2	"active aging"[Title/Abstract] OR "active ageing"[Title/Abstract] OR "healthy ageing"[Title/Abstract] OR "aging well"[Title/Abstract] OR "ageing well"[Title/Abstract] OR "healthy strategies"[Title/Abstract] OR "healthy aging"[Title/Abstract]	9.092
# 1	"healthy aging"[MeSH Terms]	1.754

Source: Authors.

The search strategy will aim to identify scientific evidence published in Portuguese, Spanish, and English without time restrictions.

2.2 Study selection

All studies identified through database searching will be retrieved and stored in Mendeley® V1.19.8 (Mendeley Ltd., Elsevier, The Netherlands) and duplicates removed. Then, the articles will be imported into Rayyan QCRI (Qatar Computing Research Institute [Data Analytics], Doha, Qatar). Two independent reviewers will screen the titles and abstracts of the identified studies to determine if they meet the inclusion criteria.

The full text of eligible studies will be retrieved. Two independent reviewers will assess them in detail against the inclusion criteria. Studies that do not meet the inclusion criteria will be excluded. Finally, the reference list of all included studies will be screened.

Any disagreements that arise between the reviewers will be resolved through discussion or with the intervention of a third reviewer at each stage of the study selection process. The original authors will be contacted if any full-text version is unavailable. The search results will be reported in full in the scoping review and presented in a PRISMA-ScR flow diagram (Tricco et al., 2018).

2.3 Data extraction

Two independent reviewers will extract data from the studies using the methodology proposed by the JBI (Peters et al., 2020) and based on the review objectives and questions. The data extraction tool (Table 2) can be adapted throughout the process.

Table 2. Data extraction tool.

Scoping review title
eHealth platforms for promoting active living: A scoping review protocol
Review objective(s)
To map eHealth platforms designed and used to promote autonomous life and active aging.
Review question(s)
- Which eHealth platforms facilitate autonomous life and promote active aging?
- What are the age groups targeted by the eHealth platforms?
- What are the domains of intervention of these eHealth platforms (physical, emotional, cognitive, or social)?
- Which outcomes are assessed in studies that have implemented and evaluated these eHealth platforms?
Inclusion/ exclusion criteria
Population
This scoping review will consider studies involving people, regardless of age.
Concept
This scoping review will consider studies with eHealth platforms designed and/or created to promote autonomous life and/or active aging.
Context
This scoping review will consider studies conducted in all contexts.
Types of evidence source
This scoping review will consider studies with quantitative, qualitative, or mixed-methods designs. It will also consider all types of systematic reviews, depending on the review objective and question.
Author(s)
Year of publication
Origin/country of origin (where the source was published or conducted)
Aims/purpose
Details/Results extracted from source of evidence (in relation to the concept of the scoping review)
- eHealth platforms;
- Age group;
- Domain (s) of intervention of eHealth platforms;
- Outcomes assessed in studies that have implemented and evaluated this type of eHealth platforms

Source: Authors.

In a similar approach to the study selection, a third researcher will resolve any disagreements in data extraction. Authors of original studies will be contacted to request missing or additional data.

2.4 Data Analysis and Presentation

Data will be presented according to the scoping review objective using a diagram or table and a narrative summary prepared by the reviewers (Peters et al., 2020).

3. Discussion

This scoping review will focus on eHealth platforms for promoting autonomous life and active aging. It is expected to contribute to systematizing the scientific evidence available and identifying possible research gaps. A limitation of this review is that it will only consider studies published in Portuguese, Spanish, and English. Nevertheless, for a broader approach by

mapping all the information described in the literature, studies from any geographical area and without any time restrictions will be included.

Given that scoping reviews do not seek to assess the methodological quality of the studies included for analysis, recommendations for clinical practice cannot be issued (Arksey & O'Malley, 2005). Nevertheless, the authors may describe any relevant limitations for the development of future studies on the topic, whether primary studies or systematic reviews.

4. Conclusion

This scoping review will appraise and synthesize the available evidence on eHealth platforms for promoting autonomous life and active aging. Thus, it will provide useful information about the domain of intervention of these platforms, the strategies used, and the expected outcomes.

Moreover, this scoping review may inform the scientific community in general and contribute to the organization of health services for the development of eHealth platforms to promote autonomous life and active aging. From this perspective, and focusing on the implications for research, the systematization of the evidence may be the basis for a systematic review and/or help clarify gaps where it may be important to invest in the future.

Future research, focusing on the effectiveness of eHealth platforms for health promotion and active aging both in the community and institutional settings environment is essential to understand their potential to various outcomes related to health, well-being and comfort. Additionally, such reviews of scientific evidence should seek to systematize knowledge on the perspectives of stakeholders on the advantages as well as the challenges of developing and implementing these platforms in different health contexts.

Acknowledgments

References

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616.

Ayala, A., Rodríguez-Blázquez, C., Calderón-Larrañaga, A., Beridze, G., Teixeira, L., Araújo, L., Rojo-Pérez, F., Fernández-Mayoralas, G., Rodríguez-Rodríguez, V., Quirós-González, V., Zorrilla-Muñoz, V., Agulló-Tomás, M. S., Ribeiro, O., & Forjaz, M. J. (2021). Influence of Active and Healthy Ageing on Quality of Life Changes: Insights from the Comparison of Three European Countries. *International journal of environmental research and public health*, *18*(8), 4152. https://doi.org/10.3390/ijerph18084152.

Biesta, G., & Picoli, B. A. (2018). The duty to resist: on schools, teachers and society. *Education, 41*(1), 21. https://doi.org/10.15448/1981-2582.2018.1.29749.

Bousquet, J., Farrell, J., Illario, M., & ARIA-MASK study group (2020). Aligning the Good Practice MASK With the Objectives of the European Innovation Partnership on Active and Healthy Ageing. *Allergy, asthma & immunology research*, *12*(2), 238–258. https://doi.org/10.4168/aair.2020.12.2.238.

Bulger, M., & Davison, P. (2018). The Promises, Challenges, and Futures of Media Literacy. *Journal of Media Literacy Education, 10*(1), 1-21. https://doi.org/10.23860/jmle-2018-10-1-1.

Costa, A., Câmara, G., de Arriaga, M. T., Nogueira, P., & Miguel, J. P. (2021). Active and Healthy Aging After COVID-19 Pandemic in Portugal and Other European Countries: Time to Rethink Strategies and Foster Action. *Frontiers in public health*, *9*, 700279. https://doi.org/10.3389/fpubh.2021.700279.

Dantas, C., van Staalduinen, W., Jegundo, A., Ganzarain, J., Van der Mark, M., Rodrigues, F., Illario, M., & De Luca, V. (2019). Smart Healthy Age-Friendly Environments - Policy Recommendations of the Thematic Network *SHAFE*. *Translational medicine @ UniSa*, *19*, 103–108.

Eckstrom, E., Neukam, S., Kalin, L., & Wright, J. (2020). Physical Activity and Healthy Aging. *Clinics in geriatric medicine*, *36*(4), 671–683. https://doi.org/10.1016/j.cger.2020.06.009.

European Commission (2021). *The 2021 Ageing Report Underlying Assumptions & Projection Methodologies.* https://doi.org/10.2765/733565.

Gómez, C. A., Kleinman, D. V., Pronk, N., Wrenn Gordon, G. L., Ochiai, E., Blakey, C., Johnson, A., & Brewer, K. H. (2021). Addressing Health Equity and Social Determinants of Health Through Healthy People 2030. *Journal of public health management and practice:JPHMP*, *27*(Suppl6),S249–S257. https://doi.org/10.1097/PHH.0000000000001297.

Holmen, H., Riiser, K., & Winger, A. (2020). Home-based pediatric palliative care and electronic health: Systematic mixed methods review. *Journal of Medical Internet Research, 22*(2). https://doi.org/10.2196/16248.

Hosseinpoor, A. R., Bergen, N., & Schlotheuber, A. (2015). Promoting health equity: WHO health inequality monitoring at global and national levels. *Global Health Action, 8*(1). https://doi.org/10.3402/GHA.V8.29034.

Lima De Oliveira, A., Pedroso De Lima, M., & Portugal, P. (2016) Self-Efficacy for Meaningful Activities Scale: Finding meaning in the active aging. *Portuguese Journal of Behavioral and Social Research, 2*(1), 3-13.

Liu, L., Stroulia, E., Nikolaidis, I., Miguel-Cruz, A., & Rios Rincon, A. (2016). Smart homes and home health monitoring technologies for older adults: A systematic review. *International Journal of Medical Informatics, 91*, 44-59. https://doi.org/10.1016/j.ijmedinf.2016.04.007.

Nunes, L. (2015). Bioethical Perspectives for Ageing. The documents produced by the Ethics Councils. *Revista Ibero-Americana de Saúde e Envelhecimento, 1*(2), 234-260. https://doi.org/10.24902/r.riase.2015.1(2).234.

Öberg, U., Orre, C. J., Isaksson, U., Schimmer, R., Larsson, H., & Hörnsten, Å. (2018). Swedish primary healthcare nurses' perceptions of using digital eHealth services in support of patient self-management. *Scandinavian Journal of Caring Sciences, 32*(2), 961-970. https://doi.org/10.1111/scs.12534.

United Nations Organization. (2018). Guide to Sustainable Development: 17 goals to transform our world. United Nations Regional Information Center for Western Europe, 1-38.

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBI evidence synthesis, 18*(10), 2119-2126. https://doi.org/10.11124/JBIES-20-00167.

Robbins, T. D., Lim Choi Keung, S. N., & Arvanitis, T. N. (2018). E-health for active ageing; A systematic review. *Maturitas, 114* (May), 34-40. https://doi.org/10.1016/j.maturitas.2018.05.008.

Sánchez-González, D., Rojo-Pérez, F., Rodríguez-Rodríguez, V., & Fernández-Mayoralas, G. (2020). Environmental and Psychosocial Interventions in Age-Friendly Communities and Active Ageing: A Systematic Review. *International journal of environmental research and public health*, *17*(22), 8305. https://doi.org/10.3390/ijerph17228305.

Scase, M., Kreiner, K., & Ascolese, A. (2018). Development and evaluation of cognitive games to promote health and wellbeing in elderly people with mild cognitive impairment. *Studies in Health Technology and Informatics,* 248, 255-262. https://doi.org/10.3233/978-1-61499-858-7-255.

Stara, V., Santini, S., Kropf, J., & D'Amen, B. (2020). Digital health coaching programs among older employees in transition to retirement: Systematic literature review. *Journal of Medical Internet Research, 22*(9). https://doi.org/10.2196/17809.

Sülz, S., van Elten, H. J., Askari, M., Weggelaar-Jansen, A. M., & Huijsman, R. (2021). eHealth Applications to Support Independent Living of Older Persons: Scoping Review of Costs and Benefits Identified in Economic Evaluations. *Journal of medical Internet research*, *23*(3), e24363. https://doi.org/10.2196/24363.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine, 169*(7), 467-473. https://doi.org/10.7326/M18-0850/SUPPL_FILE/M18-0850_SUPPLEMENT.PDF.

Van Staalduinen, W. H., Ganzarain, J. G., Dantas, C., Rodriguez, F., Stiehr, K., Schulze, J., Fernandez-Rivera, C., Kelly, P., McGrory, J., Pritchard, C., Berry, D., Zallio, M., Ciesla, A., Ulanicka, M., Renaux, S., & Guzy, M. (2020). Learning to implement Smart Healthy Age-Friendly Environments. Translational Medicine. *UniSa, 23*(4), 1-5. https://doi.org/10.37825/2239-9747.1021.

Varela, V. dos S., Mendes, J. M., Abreu, D. P. G., Piexak, D. R., Martins, K. do P., & Bandeira, E. de O. (2020). Health promotion and disease prevention from the perspective of active aging. *Research, Society and Development,* 9(11), e65491110096. https://doi.org/10.33448/rsd-v9i11.10096

World Health Organization (2015). World Report on Aging and Health - Executive Summary.*Psychological Science, 25*(9), 1682-1690.