

Digital Health Technologies for Metabolic Disorders in Older Adults: A Scoping Review

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Abstract

Introduction: Metabolic disorders are leading causes of mortality and disability worldwide and significantly affect older adults relative to those younger. Digital health technologies (DHTs) emerge as promising tools for navigating health in day-to-day life. However, their role in targeting metabolic disorders, particularly for older adults, is not yet fully understood. Thus, this work aims to understand (1) how prevalent are DHTs in navigating metabolic disorders in older adults?, and (2) what specific classes of DHTs have been implemented to navigate metabolic disorders in older adults?

Methods and Analysis: We will conduct a scoping review following the recommended framework by Arksey and O'Malley [1]. Our search will focus on three primary concepts: older adults, DHTs, and metabolic disorders. We will search five databases (Cochrane, Embase, PubMed, Scopus, and Web of Science) to identify original research articles published between January 2014 and January 2024. Two reviewers will independently screen articles for inclusion based on predetermined criteria, and a separate reviewer will resolve conflicts. Data will be extracted using a standardized form, and the findings will be synthesized and reported qualitatively and quantitatively.

Expected results: Following the completion of the full-text reviews by data extraction charts, we will synthesize the extracted data in tables that summarize the current DHTs landscape in targeting metabolic disorders among older adults. In line with our two research questions, we will first describe the overall frequency of DHTs in studies targeting metabolic disorders in older adults. Second, we will describe the frequency of each class of DHTs (promoting health & wellness, (ii) patient monitoring, (iii) care support, (iv) digital diagnostics, and (v) digital therapeutics in targeting metabolic disorders in older adults. We will also use a qualitative

approach to describe the resulting prevalence of DHTs in metabolic disorders and older adults in a narrative synthesis.

Conclusions & Implications: To our knowledge, this scoping review is the first to address a gap in the understanding of DHTs for metabolic disorders among older adults. Our study's exploration of the prevalence and application of DHTs in managing metabolic disorders among older adults is expected to highlight essential areas where research is lacking. Specifically, the findings could reveal where DHTs are underutilized, presenting opportunities for their increased inclusion and enhancement. Additionally, the results might offer insights into strategic areas for expanding the use of DHTs for older adults. This review, by shedding light on these aspects, will significantly contribute to the advancement of knowledge in effectively leveraging DHTs to improve metabolic health and well-being in the older population worldwide.

References

- [1] H. Arksey and L. O'Malley, 'Scoping studies: towards a methodological framework', *International Journal of Social Research Methodology*, vol. 8, no. 1, pp. 19–32, Feb. 2005, doi: 10.1080/1364557032000119616.

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1. Problem

Metabolic disorders, including type 2 diabetes, obesity, and hypertension, are major contributors to mortality and morbidity globally, particularly affecting older adults [1]. Digital health technologies (DHTs), such as patient monitoring and digital diagnostics, show potential in managing these disorders daily, yet their effectiveness in older populations remains unclear [2]. This study explores the utilization and impact of **DHTs on metabolic disorders among older adults** to enhance understanding and improve health outcomes.

2. Research Question

RQ1. How prevalent are DHTs in addressing metabolic disorders in older adults?

RQ2. What specific classes of DHTs have been implemented to address metabolic disorders in older adults?

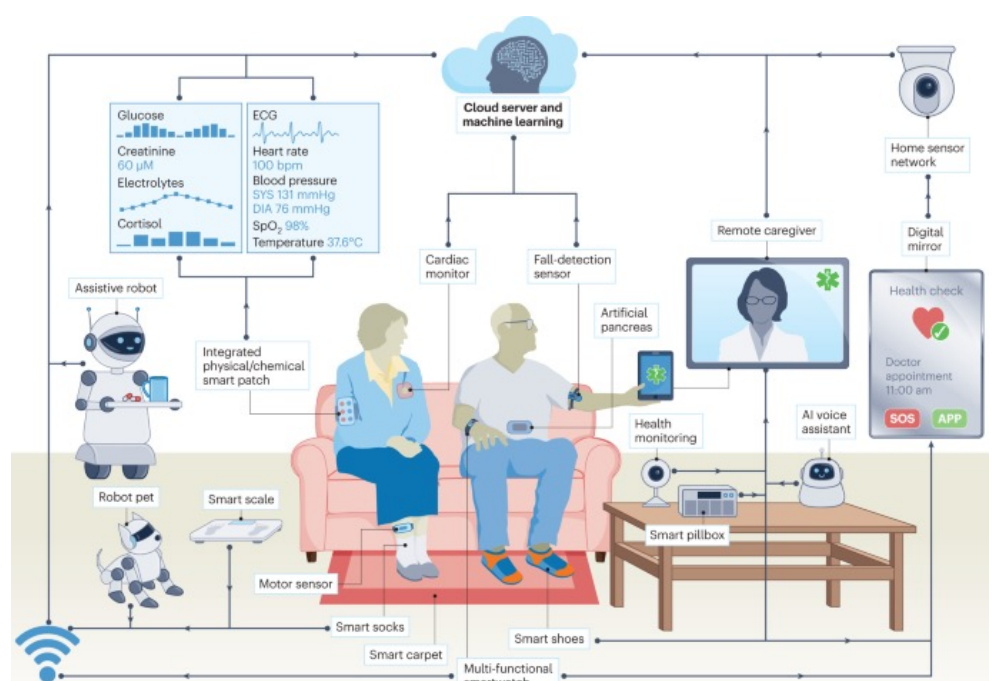
RQ3. How are DHTs used in addressing metabolic disorders, and by whom?

3. Methods

We will conduct a scoping review following the recommended framework by Arksey and O'Malley [3]. Our search will focus on three primary concepts: metabolic disorders, DHTs, and older adults. We plan to search five online databases - Cochrane, Embase, PubMed, Scopus, and Web of Science - to identify original research articles.

4. Expected Results

To our knowledge, this scoping review is the first to address a **gap in the understanding of DHTs for metabolic disorders among older adults.**



Adapted from Chen et al., 2023

Quellen

- [1] M. Bechtold, J. Palmer, J. Valtos, C. Iasiello, and J. Sowers, "Metabolic syndrome in the elderly," *Curr. Diab. Rep.*, vol. 6, no. 1, pp. 64–71, Jan. 2006, doi: 10.1007/s11892-006-0054-3.
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- [3] H. Arksey and L. O'Malley, "Scoping studies: towards a methodological framework," *Int. J. Soc. Res. Methodol.*, vol. 8, no. 1, pp. 19–32, Feb. 2005, doi: 10.1080/1364557032000119616.