

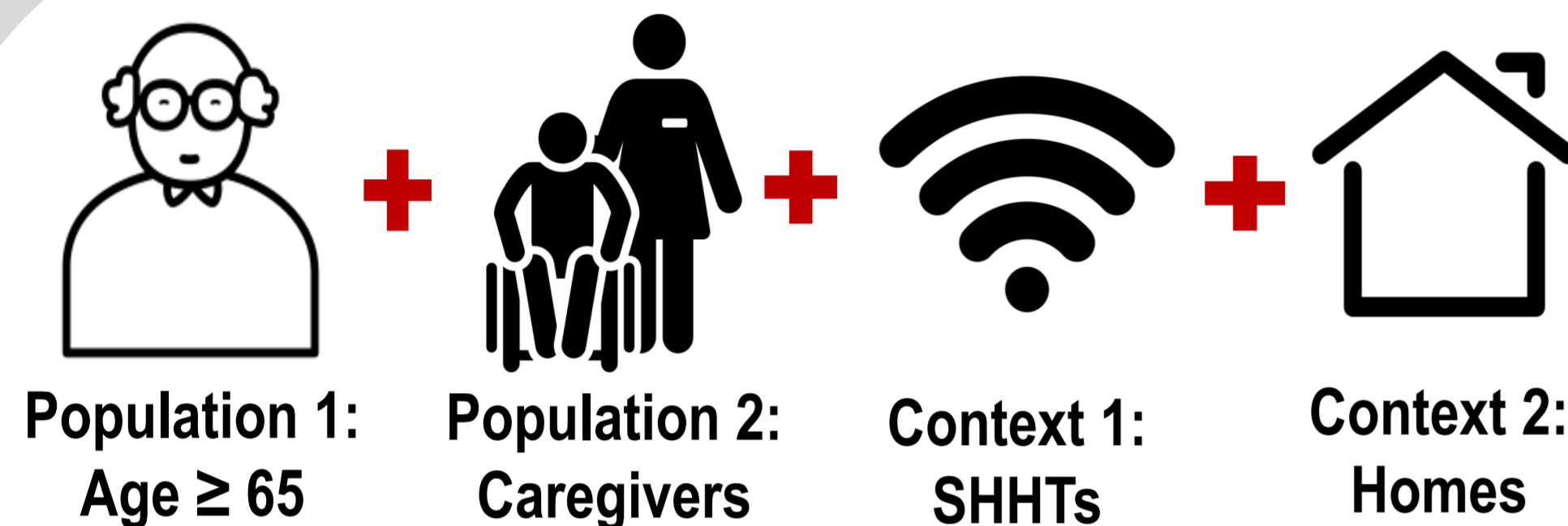
# A Systematic Review of the Opportunities and Barriers of Smart Home Health Technologies in the Care of Older Persons

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## Objectives

Systematically assesses the knowledge, barriers, and opportunities of all SHHTs for the care of older persons at their places of residence from empirical articles with feedback from older persons and their caregivers.

## Methods



- ✓ English, French, German
- ✓ 01.01.2000 – 31.12.2020
- ✓ 10 Databases
- ✓ Purpose of tech: Caregiving

A search algorithm was developed with the help of an information specialist to capture empirical literature published on the use of smart home health technologies (SHHTs) from the feedback of older persons and their formal & informal caregivers.

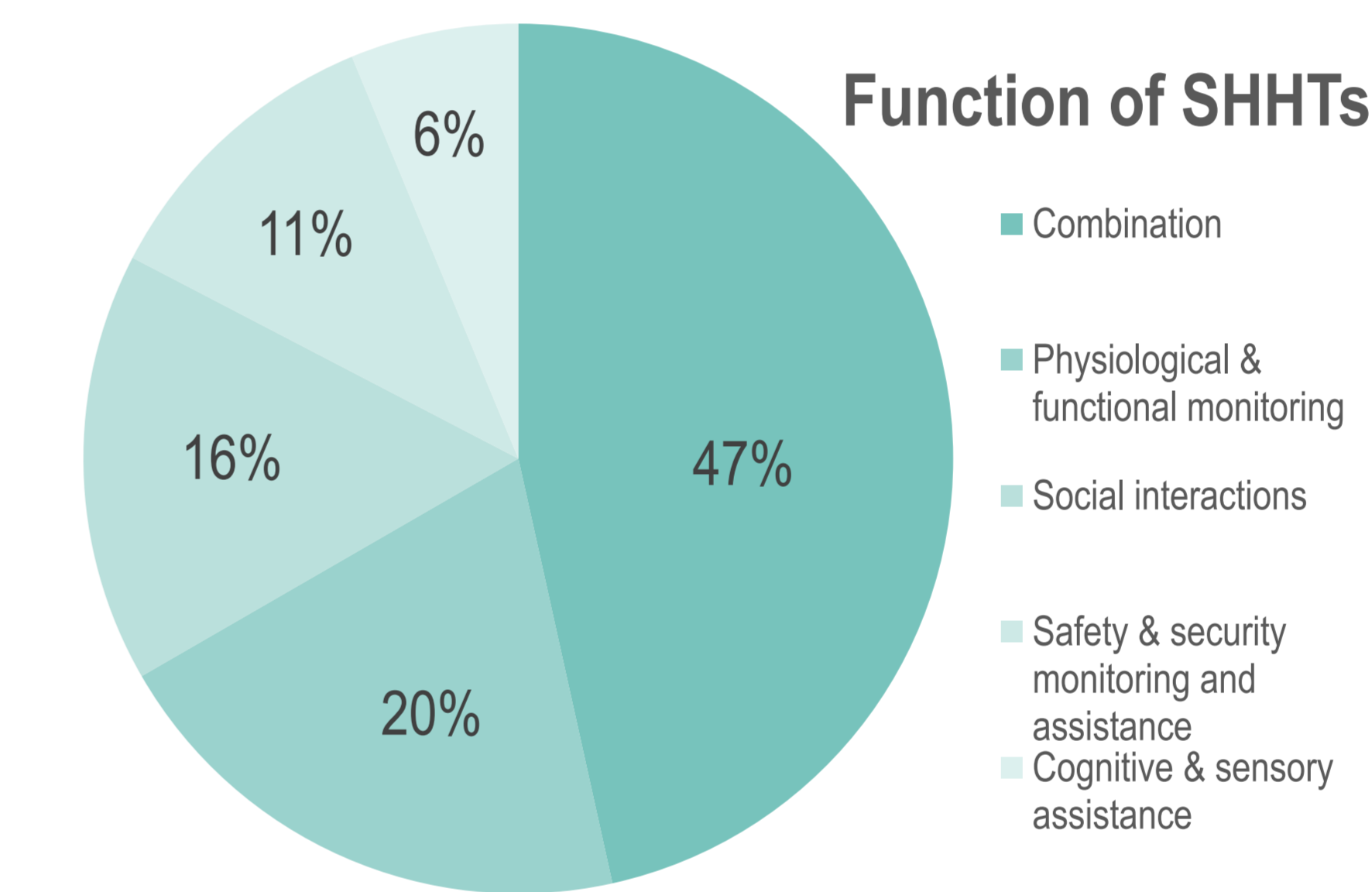
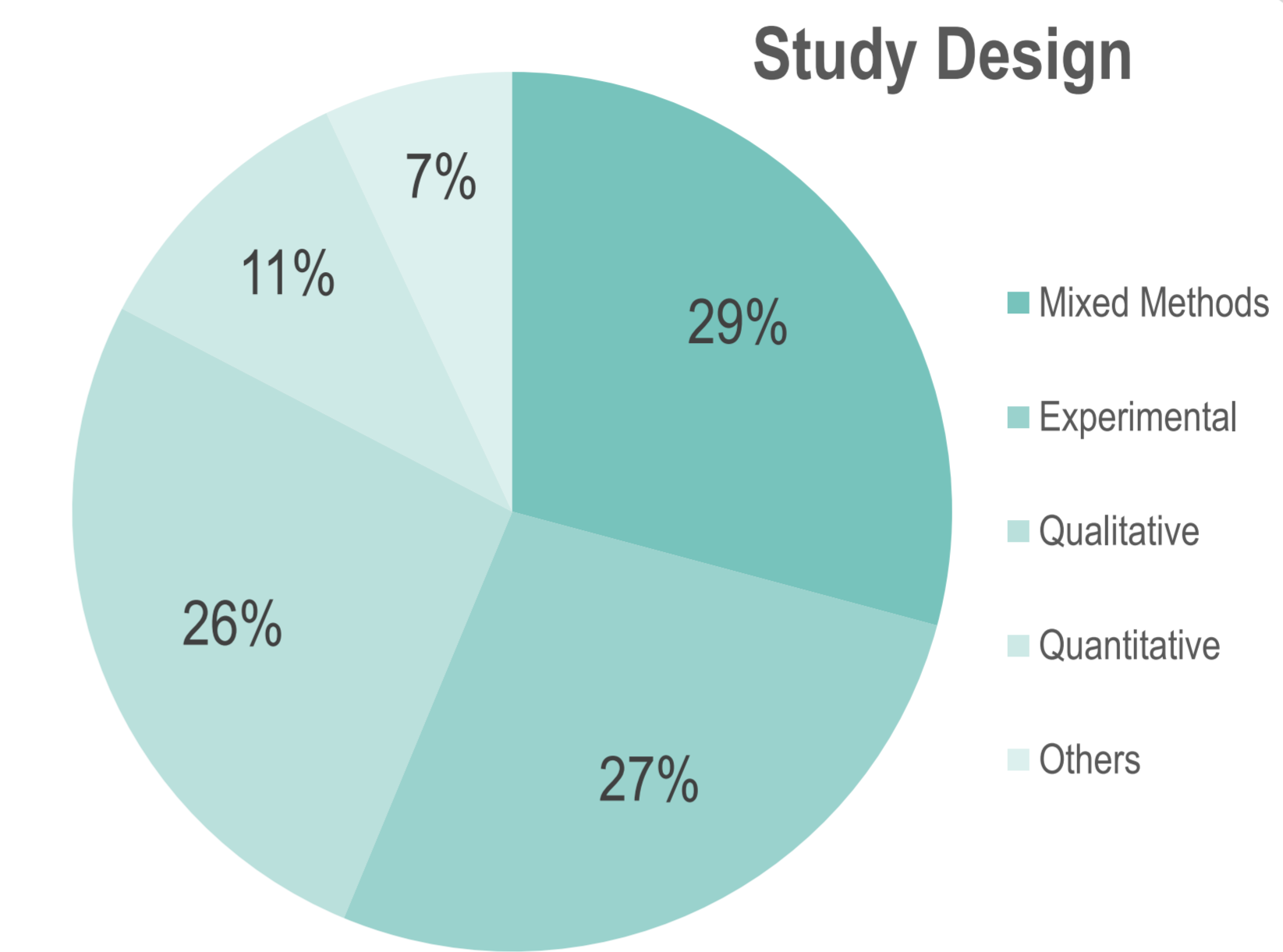
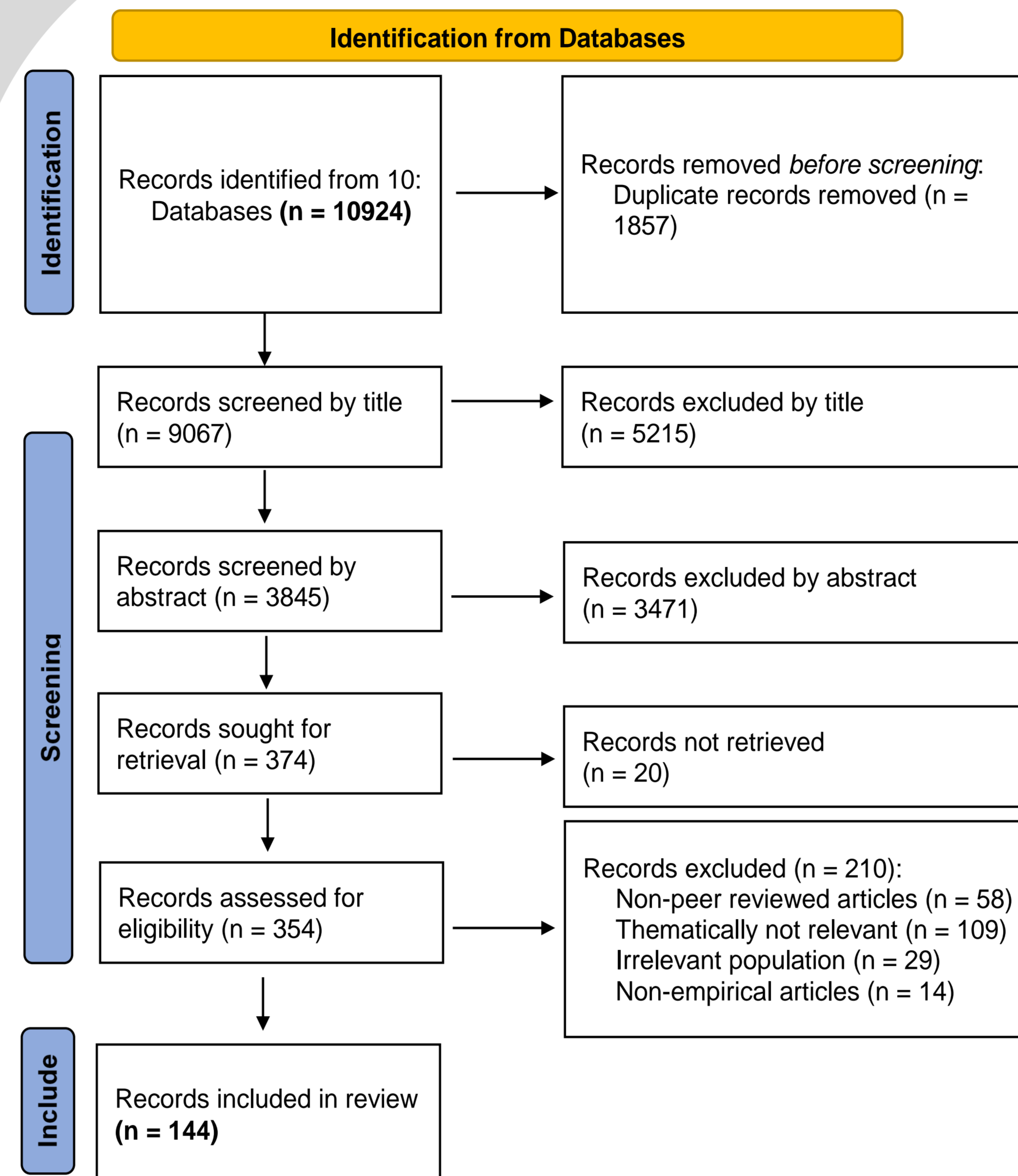
1. Results from search algorithms consolidated for all databases and uploaded to Endnote, where duplicates were removed automatically.
2. All titles and abstracts screened manually for duplicates and content, exclusions occurred with documented reasons
3. Full texts retrieved and prepared for data extraction.
4. To avoid bias, two authors analyzed 10% of all articles, and achieved 80% in consistency in content.
5. The final extraction documents were combined and synthesized according to benefits or barriers of the technologies.

\*Non-empirical studies, book chapters, conference proceedings, newspaper articles, commentary, dissertations, theses, and systematic reviews were excluded

## What this paper adds

- ❖ The **continuous monitoring function was appreciated** and associated with **reduced caregiving burdens**, particularly for carers of PwD.
- ❖ SHHTs could be useful for the **improvement of self-management and independent living**, enabling medication management, diet, picking up or carrying items around the house, or assisting with showering and walking.
- ❖ **Barriers currently exist with respect to ease of usability** of these technologies, included difficulties to use, obtrusive, ugly, low in interoperability and technical limitations. Additional **barriers exist in social acceptance and cost**.
- ❖ SHHTs' **overall contribution to the reduction of loneliness was positive**, albeit without complete elimination. However, **older persons still worried for the eventual replacement of social connectedness**.

## Results



Main Benefits of Technologies	Mentioned by # of articles	Main Barriers of Technologies	Mentioned by # of articles
Continuous monitoring of the older person	106	Usability	94
Social interactions of older persons	63	Social acceptance	61
Promotes independence or independent living for older persons	57	Cost-related issues	40
Reminds older persons to self-care and self-management	42	Loss of relationships or increase of loneliness	17
Other benefits	65	Other concerns	20

## Gaps for future research

- ❖ **Who can afford it?**  
The adoption of SHHT's may not only mean the one-time cost of the device, but also its maintenance. We call for more research focused on cost, in terms of the sensitivity of the end-users, its own cost-effectiveness as a technological system for health purposes, and the equal opportunities for access.
- ❖ **Why unobtrusiveness?**  
The concept of obtrusiveness is a recurring theme, connected to wearability, aesthetics of design, privacy, or social stigma. We invite in-depth research on obtrusiveness as related to other ethical considerations.
- ❖ **Other variables affecting SHHT adoption?**  
We encourage future focus to add independent variables to the conditions of end-user acceptability towards different SHHTs, such as cultural background, generational gaps, technology readiness, living situation, financial comfort, and the nature of their social environment.

## Acknowledgements

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