Scoping review: How older adults with hearing loss engage with and adopt smartphone applications used alongside hearing aids, including the barriers and facilitators influencing their use ?

N,Rouf, Dr S.Isherwood

UNIVERSITY OF LEEDS

Introduction

In the UK, 2.4 million older adults remain digitally excluded, raising the concerns about digital ageism and widening health inequalities (Age UK,2025). This issue is particularly prevalent in Audiology. Around 41.7% of UK adults aged 50 years and over are affected by hearing loss (Nice,2024). At the same time, hearing aids are becoming increasingly connected to smartphones and other digital applications, offering users greater autonomy through features such as personalisation adjustment and remote support. However, for most older adults technological innovation does not automatically translate into accessibility. Research has identified digital literacy, confidence, perceived complexity and difficulties navigating technology as barriers to hearing aid app use, particularly among older adults (Maidment et al, 2019, Stieglitz-Ham et al, 2013).This creates an important question for modern audiology:

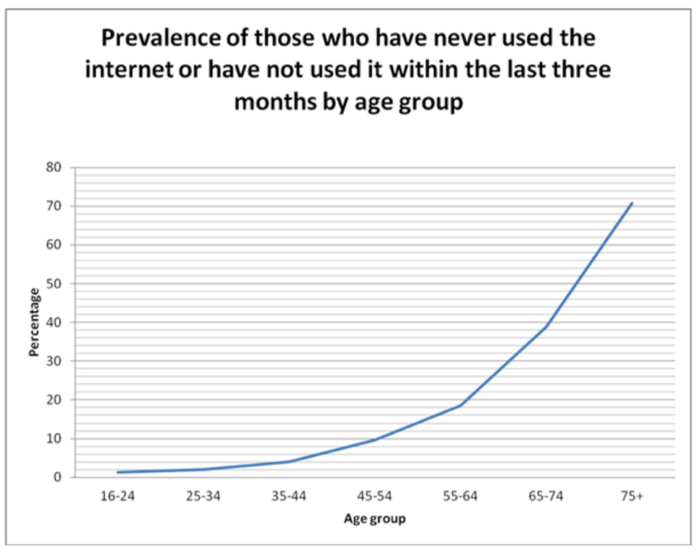
Are we designing hearing technology that is accessible to older adults, or are we unintentionally creating another barrier to effective hearing care?

Understanding how older adults experience and engage with digital hearing technologies is therefore essential. Identifying these barriers may help audiologists provide **more inclusive, person centred support**, ensuring that technological advances improve hearing outcomes without widening existing inequalities.

Aim:

The purpose of this scoping review was to determine whether smartphone apps are aiding rehabilitation and offering the desired benefit, and if not, to investigate why this might be and explore any future recommendations for technology uptake to aid rehabilitation.

Figure 1: Not using the internet, by age, UK 2012



Methodolgy

Study Design

The scoping review was guided by the Arksey & O'Malley 2005 framework and the Joanna Briggs institute (JBI) guidance, with reporting following **PRISMA-ScR**.

Search strategy

PCC Criteria

Population: Adults ≥60 years with hearing loss
Concept: Smartphone apps supporting hearing aid functionality
Context: Technology use, adoption, engagement and usability

Literature Search

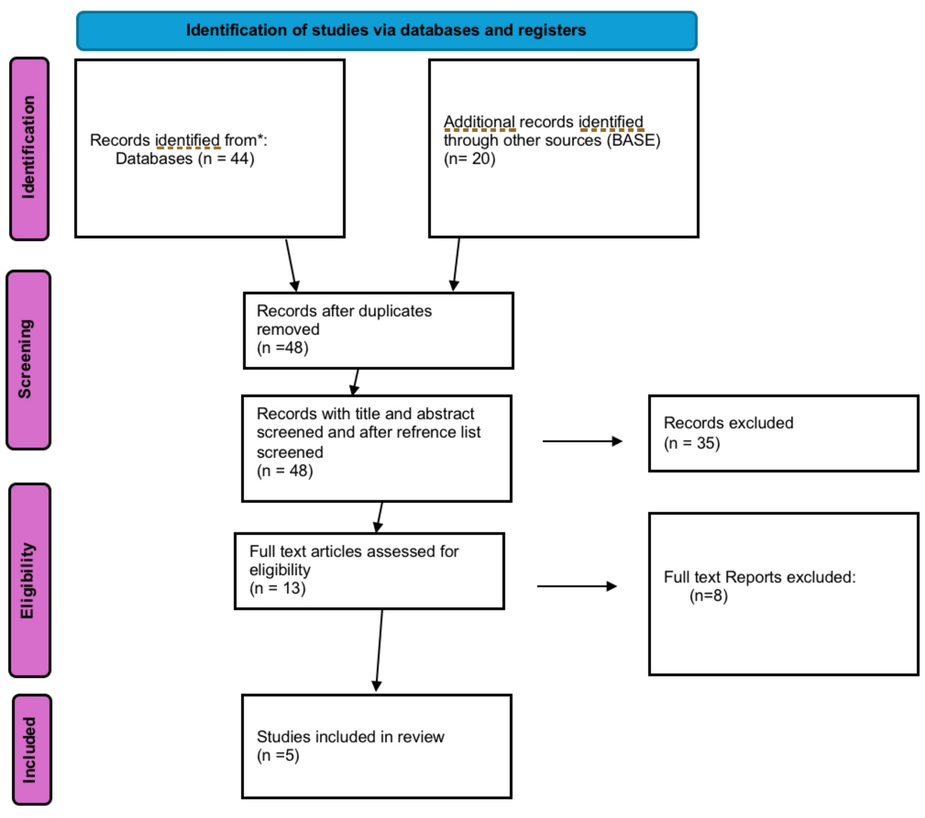
Databases searched: **Ovid (MEDLINE, Embase, PsycINFO), PubMed, Google Scholar & BASE**
Boolean operators used
Publication period: 2005–2026

Study Selection

Titles/abstracts and full texts were screened against predefined **inclusion and exclusion criteria**.

Data Synthesis

Study characteristics and findings were extracted and synthesised using Braun and Clark 2006 **thematic analysis** to identify key themes that emerged from the full text screen.



Results

Following thematic analysis 3 themes emerges across the 5 included studies:

Papers:	Theme 1: Self management	Theme 2: Access to hearing healthcare	Theme 3: Adoption and usability
Gomez et al, 2022	✓		✓
Convery et al 2020	✓	✓	✓
Ceylan et al 2025			✓
Timmer et al 2020	✓	✓	✓
Florian Ross et al 2020	✓	✓	

Theme 1 – Self-management: Smartphone apps increased users autonomy, control and confidence by enabling real time hearing aid adjustments and greater involvement in decision making (Timmer et al, 2020, Gomez et al, 2022).

Theme 2 – Access to healthcare: Apps supported remote communication, follow up and hearing aid adjustments and were effective for resolving minor issues, improving flexibility and access to care while complementing face to face services thus contributing to a more Person centred care model of audiological service delivery (Convery et al, 2020 Ceylan et al, 2025).

Theme 3 – Adoption and usability: Across all included studies engagement was influenced by digital literacy, confidence, app complexity, cognitive load and dexterity difficulties. Simple, accessible designs and appropriate support were therefore important for successful adoption among older adults(Ceylan et al, 2025, Gomez et al, 2022, Timmer et al, 2020). .

Conclusion

In conclusion, barriers to smartphone based health technologies among older adults cannot be attributed solely to age or digital illiteracy. Instead, they reflect a mismatch between technology design and users needs. In audiology, apps should consider older adults abilities, preferences and support needs to avoid digital exclusion.

Future research should focus on inclusive design, usability testing and clinical support. Providing appropriate digital support within audiology clinics is essential to ensure older adults can effectively use smartphone connected hearing aids, access advanced features and receive accessible, person-centred hearing rehabilitation.

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