2023-04-14

Barriers and facilitators to the adoption and use of assistive technology for adults with an intellectual disability who live in supported accommodation: a mixed methods systematic review protocol

Morris, B

https://pearl.plymouth.ac.uk/handle/10026.1/20678

JBI Evidence Synthesis

Barriers and facilitators for adoption of assistive technology for adults with an intellectual disability living in supported accommodation: a mixed methods systematic review protocol

--Manuscript Draft--

PRO22-00313 cover letter

- TOC: protocols
- Header: mixed methods systematic review

Barriers and facilitators to the adoption and use of assistive technology for adults with an intellectual disability who live in supported accommodation: a mixed methods systematic review protocol

Benjamin Morris [1,3]
Alison Warren [1,3]
Hannah Bradwell [2,3]
Miriam Noonan [1,3]

1. School of Health Professions, Faculty of Health, University of Plymouth, Plymouth, Devon, United Kingdom
2. School of Nursing and Midwifery Faculty of Health, University of Plymouth, Plymouth, Devon, United Kingdom
3. The University of Plymouth Centre for Innovations in Health and Social Care: A JBI Center of Excellence
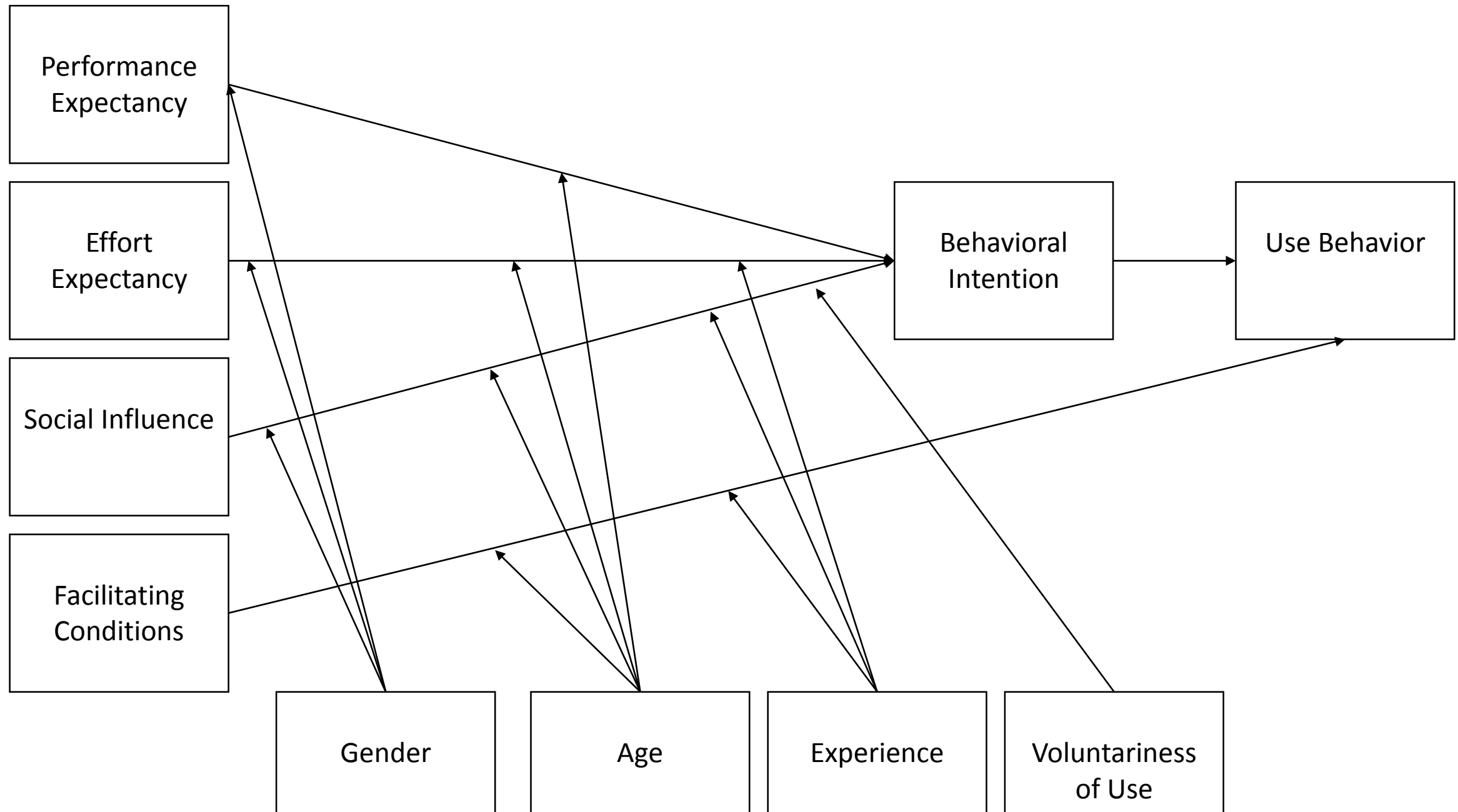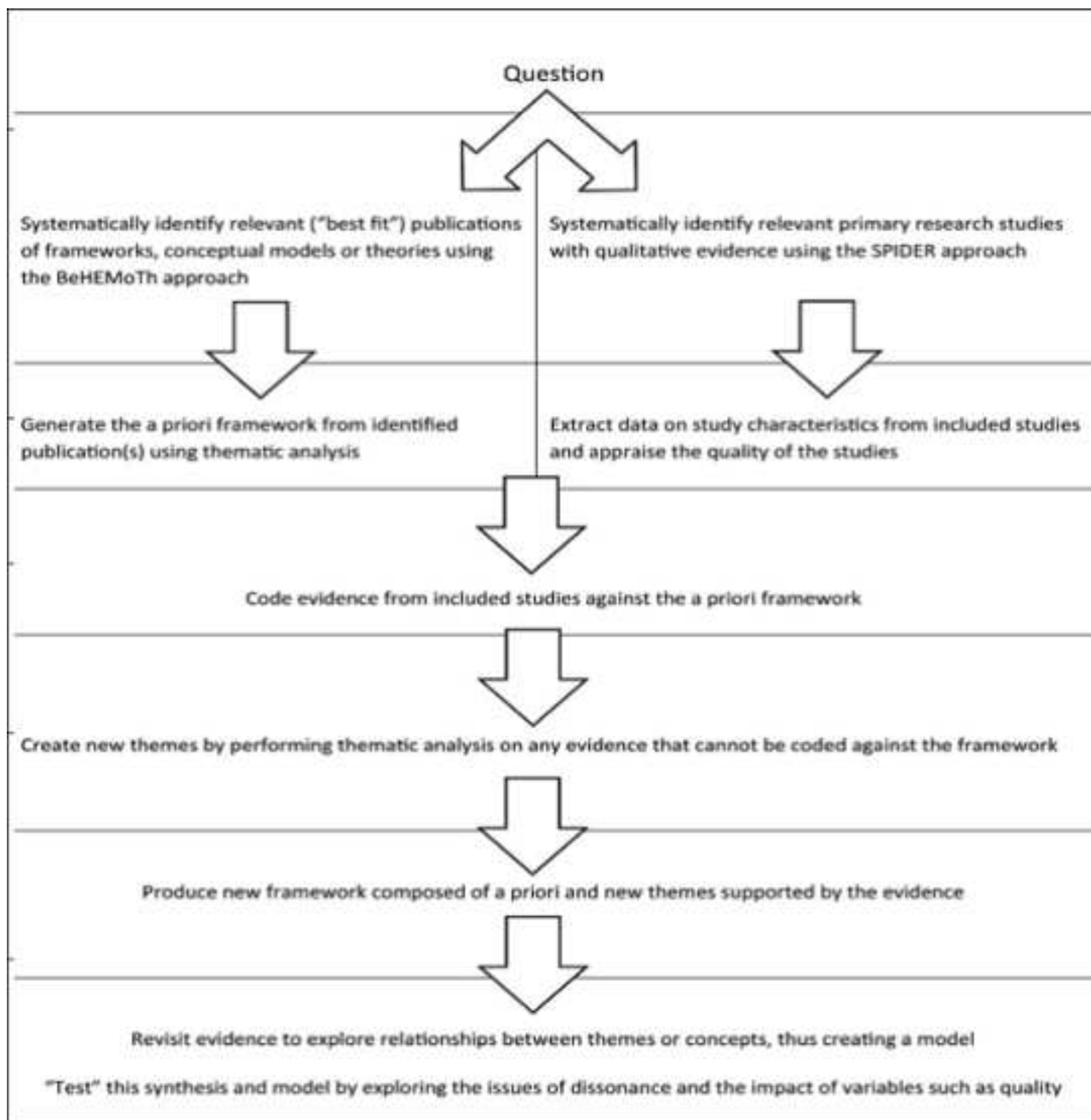
Corresponding author
Benjamin Morris

benjamin.morris@plymouth.ac.uk

The authors declare no conflicts of interest

Figure

Question

Systematically identify relevant ("best fit") publications of frameworks, conceptual models or theories using the BeHEMoTh approach

Systematically identify relevant primary research studies with qualitative evidence using the SPIDER approach

Generate the a priori framework from identified publication(s) using thematic analysis

Extract data on study characteristics from included studies and appraise the quality of the studies

Code evidence from included studies against the a priori framework

Create new themes by performing thematic analysis on any evidence that cannot be coded against the framework

Produce new framework composed of a priori and new themes supported by the evidence

Revisit evidence to explore relationships between themes or concepts, thus creating a model

"Test" this synthesis and model by exploring the issues of dissonance and the impact of variables such as quality

Carroll, C., Booth, A., Leaviss, J. and Rick, J., 2013. "Best fit" framework synthesis: refining the method. BMC medical research methodology, 13(1), pp.1-16. Figure 1: Qualitative evidence synthesis using "Best-fit" framework synthesis.

Barriers and facilitators of the adoption and use of assistive technology for adults with an intellectual disability who live in supported accommodation: a mixed methods systematic review protocol

Abstract <level 1 heading>

Objective: This review will identify the barriers and facilitators of assistive technology adoption and use in adults with intellectual disabilities living in supported accommodation. This will inform the development of an assistive technology adoption framework for these settings.

Introduction: Assistive technology has the potential to increase the independence and well-being of people with intellectual disabilities; however, it is often not adopted. Generic models of technology adoption exist, and a recent systematic review has explored factors influencing access to assistive technology by people with intellectual disabilities. However, no review has presented a framework of adoption or use of technology specifically for people with intellectual disabilities living in supported accommodation.

Inclusion criteria: This review will include qualitative, quantitative, and mixed method studies as well as gray literature published from 1989 to 2023 on the barriers and facilitators of technology adoption and use by adults with intellectual disabilities living in supported accommodation. Systematic reviews and theses will be excluded.

Methods: The review will be conducted in accordance with the JBI methodology for mixed methods systematic reviews and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Databases to be searched will include PubMed, Scopus, Web of Science Core Collection, CINAHL, IEEE Xplore, and SocINDEX. Two independent reviewers will screen titles and abstracts for relevance and quality. Data will be extracted by 1 reviewer and validated by a second independently. Data analysis will use a convergent integrated approach, with quantitative data "qualitized" using thematic analysis to allow comparison. All data will be mapped onto an existing framework of technological adoption via framework synthesis.

Systematic review registration number: 353732

Keywords: assistive technology; intellectual disabilities; supported accommodation

Abstract word count: 260

Total manuscript word count:

Introduction <level 1 heading>

Assistive technology (AT) refers to any products, systems, or services used to enhance an individual's functioning and well-being (1). AT has the potential to help address individuals' needs by supporting independence, well-being, engagement, and allowing individuals to remain in their homes (2). The potential for AT to support engagement in meaningful and purposeful activity in the intellectual disability (ID) population has been established in several areas, from facilitating social relationships and leisure activities (3) to independent planning and engagement (4). Yet the abandonment rate of new AT is roughly 30% (+/− 10%) (5). The successful adoption of technology is inhibited by a variety of factors,

39 including meaning and purpose to the individual (6), the individual's support network (7), durability and
40 ease of use (8), attractiveness of the device (9), and the cost and ease of setup (10). Multiple frameworks
41 have been developed to identify barriers and facilitators of AT adoption and use (11-14), with the aim of
42 facilitating this process. However, these frameworks need to be adapted to specific settings as adoption
43 and use factors vary across different settings and populations (15). Supported accommodation (ie,
44 domestic-scale settings with paid staff delivering support at least once a day) are one such setting where
45 adoption and use factors remain unknown.

46 A recent systematic review of access factors (16) failed to identify any papers specifically related to
47 supported living. This systematic review explored the barriers and facilitators of access to AT for people
48 with ID, providing an important understanding of these factors in the general ID population. However, as
49 adoption and use factors specific to supported accommodation remain unknown, the review cannot be
50 used to create an adoption framework for this setting. Moreover, the study focuses on access to AT
51 without clearly distinguishing between access to, and the sustained use of, AT post acquisition. This
52 further limits its use in the creation of a framework concerned with both accessing and using AT. Finally,
53 the scope of this review did not include the COVID-19 pandemic, which spurred the unprecedented
54 adoption of new technology in a short time frame (17), thereby enabling the capture of previously
55 unidentified adoption factors.

56 To address the gap in the literature, this review will establish a more detailed understanding of the
57 factors that influence the adoption and use of AT by people with an ID living in supported
58 accommodation. This will inform the development of a framework which can be used by clinicians to
59 facilitate adoption and use of AT by individuals with ID, improving their safety and increasing engagement
60 in daily life. In contrast to the previous systematic review, the proposed review will explore both the
61 adoption and the sustained use of AT. The time period (1989 to 2023) also covers the COVID-19
62 pandemic and the research stemming from it.

63 The Unified Theory of Acceptance and Use of Technology (UTAUT) (14) (see Figure 1) is the theoretical
64 framework of the proposed review, serving as the "best fit" framework synthesis (see Figure 2). The
65 UTAUT has 4 key constructs (performance expectancy, effort expectancy, social influence, and enabling
66 conditions) that predict use behavior and intention. These factors are moderated by 4 moderators
67 (gender, age, experience, and voluntariness of use). The "best fit" framework synthesis will seek to match
68 the barriers and facilitators identified by the systematic review to existing constructs and moderators,
69 expanding or removing these as needed.

70 As the earlier systematic review included qualitative and quantitative methodologies, the proposed
71 systematic review will have a mixed methods design. Extracted quantitative data will be converted into
72 qualitative data through thematic analysis, using a priori codes taken from the UTAUT. The qualitized
73 data and data from qualitative studies will be thematically analyzed. The generated codes will be used to
74 identify adoption factors that will be synthesized into an updated framework. A preliminary search of 3
75 databases (PROSPERO, *JBI Evidence Synthesis*, and Cochrane) has been undertaken and no existing or
76 ongoing mixed methods or individual systematic reviews on the topic have been identified.

77 This systematic review has 2 objectives to facilitate the synthesis of the UTAUT into an updated adoption
78 framework: (i) to ascertain the extent to which key constructs are identified in supported living; and (ii) to
79 ascertain which moderators influence adoption.

80

81 **Figure 1: The Unified Theory of Acceptance and Use of Technology (UTAUT) model**

82 <insert Figure 1 here>

Review question <level 1 heading>

What are the barriers and facilitators of the adoption and use of assistive technology for adults with an intellectual disability who live in supported accommodation?

Inclusion criteria <level 1 heading>

Participants <level 2 heading>

This review will consider studies that investigate adults > 18 years who have a developmental global cognitive deficit impacting intellectual functioning and adaptive functioning, and who live in supported accommodation (domestic-scale settings with paid staff delivering support at least once a day).

Studies will be excluded if ID diagnosis is not confirmed or is otherwise unclear in the participant population; if ID is not present; and if the accommodation does not meet supported accommodation criteria (domestic scale settings with a paid staff member delivering support at least once a day) for example, secure units, hospitals, people supported by families at home, or large-scale residential settings (greater than 10 people per house).

Phenomena of interest <level 2 heading>

This review will consider studies that investigate barriers (factors that limit or inhibit) and facilitators (factors that encourage or enable) of adoption and use of AT (any products, systems, or services used to enhance an individual's functioning and well-being)(1).

Context <level 2 heading>

This review will consider studies that investigate AT adopted and used by people living or working in supported accommodation. This technology may be used by adults with an ID, by staff to support the adults with an ID, or by both. The technology will be included even when used outside the accommodation (eg, a smart watch). There will be no limitations on the geographic location of studies.

Types of studies <level 2 heading>

This review will consider quantitative, qualitative, and mixed method studies. These sources will include peer-reviewed studies and gray literature, such as third-sector reports, program evaluations, conference papers, and surveys. Gray literature sources will be searched because supported accommodation for people with ID in the UK is generally run by third-sector organizations. These organizations experience significant barriers to accessing and producing peer-reviewed literature (18); therefore, it is expected that much of the research on the success of implementations will exist in end-of-year reports to funders or client satisfaction surveys. Theses will be excluded; however, where relevant theses are identified, efforts will be made to find linked published works, including but not limited to, contacting the author. Theses will be excluded as the analysis of such documents is beyond the resources available to the authors of this review.

The time frame of the search will be 1989 to 2023. This is because the seminal Technology Acceptance Model was published in 1989. This model has the widest body of research based on its factors predicting technology use (19), with much of the research involving modification of the base model by introducing new factors to it. These represent novel barriers and facilitators, and are therefore likely to meet the inclusion criteria for the review. Additionally, the model led to the creation of the UTAUT—the model providing the basis for the "best fit" framework synthesis. Consequently, its publication date was identified as a suitable starting year. The end date will ensure the inclusion of data from the COVID-19 pandemic.

Methods <level 1 heading>

The proposed systematic review will be conducted in accordance with the JBI methodology for mixed methods systematic reviews (20). The study will also follow the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines (21). The study has been registered on the JBI systematic review register and PROSPERO (CRD4202235373).

Search strategy <level 2 heading>

An initial limited search of Google Scholar was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles and the index terms used to describe the articles were used to develop a full search strategy for PubMed (see Appendix I). The search strategy, including all identified keywords and index terms, will be adapted for all unpublished studies and gray literature searches. The reference lists of all studies selected for critical appraisal will be screened for additional studies. The search strategy was developed with the support of an information specialist employed by the University of Plymouth.

Studies published from 1989 to 2023 will be included. The databases to be searched will include PubMed, Scopus, Web of Science Core Collection, CINAHL (EBSCO), IEEE Xplore, and SocINDEX (EBSCO). Sources of unpublished studies and gray literature to be searched will include IEEE Xplore, Kings Fund, and Social Science Research Network. As preliminary searches of the databases specified above and past related searches (22) have yielded limited results when using combined search terms (technology, intellectual disability, supported living/health care, and adults), a snowballing strategy will be used. Technology and implementation studies journals (eg, MIS Quarterly, Implementation Science) identified as relevant during the snowball search will be hand-searched.

Only studies written in English will be considered. This is because the primary researcher is not fluent in any other languages to a level that would allow academic analysis. Resources for translation are not available. The total number of articles retrieved at the title and abstract screening phase published in a language other than English, as well as a breakdown of the numbers by language, will be reported to provide context on information missing from the review.

Study selection <level 2 heading>

Following the search, all identified citations will be loaded into Zotero 6.0.x (Corporation for Digital Scholarship and Roy Rosenzweig Center for History and New Media, VA, USA) and duplicates removed. Following a pilot test, titles and abstracts will be screened by 2 independent reviewers for assessment against the inclusion criteria. Potentially relevant studies will be retrieved in full, and their citation details imported into JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia) (23). The full text of selected citations will be assessed in detail against the inclusion criteria by 2 independent reviewers. Reasons for exclusion of full-text studies that do not meet the inclusion criteria will be recorded and reported in the systematic review. Any disagreements that arise between the reviewers at any stage of the study selection process will be resolved through discussion or with a third reviewer. The results of the search will be reported in full in the final review and presented in a PRISMA flow diagram (21).

Assessment of methodological quality <level 2 heading>

Quantitative studies (and quantitative components of mixed methods studies and gray literature) selected for retrieval will be assessed by 2 independent reviewers for methodological validity prior to inclusion in the review using the appropriate standardized critical appraisal instruments from JBI SUMARI (23).

Qualitative studies (and qualitative components of mixed methods studies and gray literature) selected for retrieval will be assessed by 2 independent reviewers for methodological validity prior to inclusion in

169 the review using the standardized critical appraisal instrument (checklist for qualitative research) from JBI
170 (24).

171 Authors of papers will be contacted to request missing or additional data for clarification, where
172 required. Any disagreements arising between the reviewers will be resolved through discussion or with a
173 third reviewer. The results of critical appraisal will be reported in narrative format and in a table.

174 All sources, regardless of the results of their methodological quality, will undergo data extraction and
175 synthesis, where possible. Sources will only be considered if data from the quantitative or qualitative
176 components can be clearly extracted. As per guidance (25) regarding the critical appraisal of sources
177 using the JBI checklist for case series, no specific thresholds will be set for source quality. Instead, the
178 source will be assessed via discussion between the 2 reviewers, facilitated with an appropriate JBI
179 checklist (26). The results of this appraisal will be presented in tabular format.

Data extraction <level 2 heading>
181 Quantitative and qualitative data will be extracted from sources included in the review by 1 reviewer,
182 with a second reviewer verifying 20% of the sources. To reduce outcome errors, the first reviewer will use
183 an unedited, standardized data extraction tool (see Appendix II) (25), as suggested by Mathes et al. (27).

184 The data extracted will include specific details about the populations, study methods, phenomena of
185 interest, context, and outcomes of relevance to the review questions. Specifically, quantitative data will
186 comprise data-based outcomes of descriptive or inferential statistical tests. Qualitative data will comprise
187 themes or subthemes with corresponding illustrations (ie, a direct quotation from a participant, an
188 observation or other supporting data from the source) and will be assigned a level of credibility using the
189 JBI checklist for qualitative research (24).

190 Any disagreements that arise between the reviewers will be resolved through discussion or with a third
191 reviewer. Authors of papers will be contacted to request missing or additional data, where required.

Data transformation <level 2 heading>
193 The quantitative data will be converted into "qualitized data." This involves transforming quantitative
194 results into textual descriptions or narrative interpretation in a way that answers the review questions.
195 This will be carried out via thematic analysis of the results and discussion sections to generate codes,
196 representing barriers or facilitators. The first step of this process will involve both reviewers familiarizing
197 themselves with the relevant quantitative text, and then converting it to single-sentence description (28).
198 These sentences will be coded independently by both reviewers using the a priori codes identified from
199 the UTAUT. These codes will be checked for consistency between the 2 reviewers. Any disagreement will
200 be adjudicated and resolved by a third reviewer. These codes will then be compared to the codes
201 identified in the qualitative data. Evidence will be coded using JBI SUMARI.

Data synthesis and integration <level 2 heading>
203 This review will follow a convergent integrated approach according to the JBI methodology for mixed
204 methods systematic reviews using JBI SUMARI (29). This will involve assembling the "qualitized"
205 quantitative data with the qualitative data. Assembled data is categorized and pooled together based on
206 similarity in meaning to produce a set of integrated findings in the form of line of action statements.
207 These factors will then be compared with an existing model of technology adoption as per the "best fit"
208 framework synthesis (30), with minor adaptions (use of PICo rather than SPIDER and use of an existing
209 framework rather than creating a framework) to fit mixed methodology synthesis. Figure 2 shows details
210 of the unmodified process.

211 **Figure 2. Qualitative evidence synthesis using "best-fit" framework synthesis.**

212 <insert Figure 2 here>

Acknowledgments <level 1 heading>

Author contributions <level 1 heading>

All authors have contributed to protocol and analysis design, including search terms. Searches will be carried out by BM, while selection and extraction will be conducted by all authors. Writing the manuscript will be carried out primarily by BM, with contributions from the other authors. All authors may contribute to data screening, analysis, or writing the manuscript.

References <level 1 heading>

1. World Health Organization. Global priority research agenda for improving access to high-quality affordable assistive technology [internet]. WHO; 2017 [cited 2023 Feb 10]. Available from: https://apps.who.int/iris/handle/10665/254660.

2. Nichols E. How personalised technology can play an important role in supporting people with learning disabilities as they age and face the onset of dementia. J Assist Technol. 2011;5(3):158-63.

3. Ramsten C, Martin L, Dag M, Hammar LM. Information and communication technology use in daily life among young adults with mild-to-moderate intellectual disability. J Intellect Disabil. 2020;24(3):289-308.

4. Söderström S, Østby M, Bakken H, Ellingsen KE. How using assistive technology for cognitive impairments improves the participation and self-determination of young adults with intellectual developmental disabilities. J Intellect Disabil. 2021;25(2):168-82.

5. Federici S, Borsci S. Providing assistive technology in Italy: the perceived delivery process quality as affecting abandonment. Disabil Rehabil Assist Technol. 2016;11(1):22-31.

6. Kintsch A, DePaula R. A framework for the adoption of assistive technology. SWAAAC 2002 Support Learn Assist Technol. 2002;3:1-10.

7. Parette Jr HP, Brotherson MJ, Huer MB. Giving families a voice in augmentative and alternative communication decision-making. Educ Train Ment Retard Dev Disabil. 2000;35(2):177-90.

8. Zhang S, McClean SI, Nugent CD, Donnelly MP, Galway L, Scotney BW, et al. A predictive model for assistive technology adoption for people with dementia. IEEE J Biomed Health Inform. 2013;18(1):375-83.

9. Moktar MN, Fikry A, Musa R, Hassan H, Ahmad SS, Ismail Z, et al. Extending cultural model of assistive technology design for autism treatment. 2014 IEEE International Symposium on Robotics and Manufacturing Automation (ROMA); 2014. p. 172-5.

10. Bigby C, Bould E, Beadle-Brown J. Conundrums of supported living: the experiences of people with intellectual disability. J Intellect Dev Disabil. 2017;42(4):309-19.

11. Scherer MJ, Craddock G. Matching person & technology (MPT) assessment process. Technol Disabil. 2002;14(3):125-31.

12. Razmak J, Bélanger CH, Farhan W. Development of a techno-humanist model for e-health adoption of innovative technology. Int J Med Inf. 2018;120:62-76.

250 13. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology.
251 MIS Q. 1989;13(3):319-40.

252 14. Venkatesh V, Morris MG, Davis GB, Davis FD. User acceptance of information technology: toward a
253 unified view. MIS Q. 2003;27(3):425-78.

254 15. Vishwanath A, Scamurra SD. Barriers to the adoption of electronic health records: using concept
255 mapping to develop a comprehensive empirical model. J Health Inform. 2007;13(2):119-34.

256 16. Boot F, Owuor J, Dinsmore J, MacLachlan M. Access to assistive technology for people with intellectual
257 disabilities: a systematic review to identify barriers and facilitators. J Intellect Disabil Res.
258 2018;62(10):900-21.

259 17. Clipper B. The influence of the COVID-19 pandemic on technology: adoption in health care. Nurse Lead.
260 2020;18(5):500-3.

261 18. Hardwick R, Anderson R, Cooper C. How do third sector organisations use research and other knowledge?
262 A systematic scoping review. Implement Sci. 2015;10(1):1-12.

263 19. Salahshour Rad M, Nilashi M, Mohamed Dahlan H. Information technology adoption: a review of the
264 literature and classification. Univers Access Inf Soc. 2018;17(2):361-90.

265 20. Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis [internet]. Adelaide: JBI; 2020 [cited
266 2023 Feb 10]. Available from: https://synthesismanual.jbi.global.

267 21. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020
268 statement: an updated guideline for reporting systematic reviews. Syst Rev. 2021;10(1):1-11.

269 22. Robert G, Greenhalgh T, MacFarlane F, Peacock R. Organisational factors influencing technology adoption
270 and assimilation in the NHS: a systematic literature review [internet]. National Institute for Health
271 Research Service Delivery and Organisation programme; 2009 [cited 2023 Feb 10]. Available from:
272 https://njl-admin.nihr.ac.uk/document/download/2027646.

273 23. Munn Z, Aromataris E, Tufanaru C, Stern C, Porritt K, Farrow J, et al. The development of software to
274 support multiple systematic review types: the Joanna Briggs Institute System for the Unified
275 Management, Assessment and Review of Information (JBI SUMARI). JBI Evid Implement. 2019;17(1):36-
276 43.

277 24. Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance for systematic
278 reviewers utilizing meta-aggregation. JBI Evid Implement. 2015;13(3):179-87.

279 25. Munn Z, Barker TH, Moola S, Tufanaru C, Stern C, McArthur A, et al. Methodological quality of case series
280 studies: an introduction to the JBI critical appraisal tool. JBI Evid Synth. 2020;18(10):2127-33.

281 26. Aromataris E, Fernandez R, Godfrey CM, Holly C, Khalil H, Tungpunkom P. Summarizing systematic
282 reviews: methodological development, conduct and reporting of an umbrella review approach. JBI Evid
283 Implement. 2015;13(3):132-40.

284 27. Mathes T, Klaßen P, Pieper D. Frequency of data extraction errors and methods to increase data
285 extraction quality: a methodological review. BMC Med Res Methodol. 2017;17(1):1-8.

286 28. Quick SM, Snowdon DA, Lawler K, McGinley JL, Soh SE, Callisaya ML. Physical therapist and physical
287 therapist student knowledge, confidence, attitudes, and beliefs about providing care for people with
288 dementia: a mixed-methods systematic review. Phys Ther. 2022;102(5):pzac010.

289   29.   Lizarondo L, Stern C, Carrier J, Godfrey C, Rieger K, Salmond S, et al. Chapter 8: Mixed methods systematic
290   reviews [internet]. In: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis. Adelaide: JBI;
291   2020 [cited 2023 Feb 10]. Available from: https://synthesismanual.jbi.global.

292   30.   Carroll C, Booth A, Leaviss J, Rick J. "Best fit" framework synthesis: refining the method. BMC Med Res
293   Methodol. 2013;13(1):1-16.

Appendix I: Search strategy <level 1 heading>

PubMed <Level 2 heading>

Searched conducted in October 2022.

#	Query	Results
1	Intellectual Disability [mh]	67,129
2	Intellectual* (Disab*[Title/Abstract] OR Diso*[Title/Abstract] OR Impairment*[Title/Abstract] OR Retard*[Title/Abstract] OR Defici*[Title/Abstract])	47,916
3	Mental* (Disab*[Title/Abstract] OR Impairment*[Title/Abstract] OR Retard*[Title/Abstract] OR Defici*[Title/Abstract] OR subnormal*[Title/Abstract] OR Handicap[Title/Abstract])	124,464
4	Idiocy[Title/Abstract]	6
5	Development* Disorder*[Title/Abstract]	620
6	Handicap[Title/Abstract]	10,153
7	Learning* Disab*[Title/Abstract]	8277
8	Develop* Disab*[Title/Abstract]	80,136
9	Amentia[Title/Abstract]	12
10	"Slow Learner"[Title/Abstract]	20
11	(((((((((Intellectual Disability [mh]) OR (Intellectual* (Disab*[Title/Abstract] OR Diso*[Title/Abstract] OR Impairment*[Title/Abstract] OR Retard*[Title/Abstract] OR Defici*[Title/Abstract]))) OR (Mental* (Disab*[Title/Abstract] OR Impairment*[Title/Abstract] OR Retard*[Title/Abstract] OR Defici*[Title/Abstract] OR subnormal*[Title/Abstract] OR Handicap[Title/Abstract]))) OR (Idiocy[Title/Abstract])) OR (Development* Disorder*[Title/Abstract])) OR (Handicap[Title/Abstract])) OR (Learning* Disab*[Title/Abstract])) OR (Develop* Disab*[Title/Abstract])) OR (Amentia[Title/Abstract])) OR ("Slow Learner"[Title/Abstract])	257,142
12	Equipment and Supplies [mh]	1,279,307
13	Computing Methodologies [mh]	1,107,843
14	Self-Help Devices [mh]	10,700
15	Rehabilitation [mh] [Instrumentation]	16,469
16	Diffusion of innovation[Title/Abstract]	642
17	Technology [mh]	421,321
18	(Technolog* (accept*[Title/Abstract] OR adopt*[Title/Abstract] OR develo*[Title/Abstract] OR implement*[Title/Abstract] OR dissemin*[Title/Abstract]))	755,924

19	(Assistive*[Title/Abstract] OR Rehab*[Title/Abstract] OR "Self help"[Title/Abstract] OR "Daily living") (Technolog*[Title/Abstract] OR Product*[Title/Abstract] OR Device*[Title/Abstract])	29,328
20	"universal design"[Title/Abstract]	638
21	Co-Design[Title/Abstract]	1801
22	"Internet of things"[Title/Abstract]	5721
23	Smart home[Title/Abstract]	748
24	"digital technology"[Title/Abstract]	2555
25	"self help device"[Title/Abstract]	13
26	IOT[Title/Abstract]	4933
27	((((((((((((((Equipment and Supplies [mh]) OR (Computing Methodologies [mh])) OR (Self-Help Devices [mh])) OR (Rehabilitation [mh] [Instrumentation])) OR (Diffusion of innovation[Title/Abstract])) OR (Technology [mh])) OR ((Technolog* (accept*[Title/Abstract] OR adopt*[Title/Abstract] OR develo*[Title/Abstract] OR implement*[Title/Abstract] OR dissemin*[Title/Abstract])))) OR ((Assistive*[Title/Abstract] OR Rehab*[Title/Abstract] OR "Self help"[Title/Abstract] OR "Daily living") (Technolog*[Title/Abstract] OR Product*[Title/Abstract] OR Device*[Title/Abstract]))) OR ("universal design"[Title/Abstract])) OR (Co-Design[Title/Abstract])) OR ("Internet of things"[Title/Abstract])) OR (Smart home[Title/Abstract])) OR ("digital technology"[Title/Abstract])) OR ("self help device"[Title/Abstract])) OR (IOT[Title/Abstract])	3,140,720
28	Long-Term Care[mh] OR Residential Facilities[mh] OR Nursing Homes[mh] OR Homes for the Aged[mh]	59,801
29	Community* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract])	646,286
30	hous*[Title/Abstract] OR accom*[Title/Abstract] OR environment*[Title/Abstract]	1,865,317
31	suppor* (living OR accom* OR hous* OR home OR tenanc* OR comm* OR facility)	2,689,104
32	resident* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR com*[Title/Abstract] OR facility[Title/Abstract])	58,617
33	shelter* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR	6672

	tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract])	
34	long term* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract])	230,332
35	"care home"[Title/Abstract]	2959
36	"core and cluster"[Title/Abstract]	0
37	Nurs* home*[Title/Abstract]	78,245
38	Assist* (living*[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home*[Title/Abstract] OR tenanc*[Title/Abstract])	57,600
39	"Hub and spoke"[Title/Abstract]	541
40	(((((((((((Long-Term Care[mh] OR Residential Facilities[mh] OR Nursing Homes[mh] OR Homes for the Aged[mh]) OR (Community* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract])) OR (hous*[Title/Abstract] OR accom*[Title/Abstract] OR environment*[Title/Abstract])) OR (suppor* (living OR accom* OR hous* OR home OR tenanc* OR comm* OR facility))) OR (resident* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR com*[Title/Abstract] OR facility[Title/Abstract]))) OR (shelter* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract]))) OR (long term* (living[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home[Title/Abstract] OR tenanc*[Title/Abstract] OR comm*[Title/Abstract] OR facility[Title/Abstract]))) OR ("care home"[Title/Abstract])) OR ("core and cluster"[Title/Abstract])) OR (Nurs* home*[Title/Abstract])) OR (Assist* (living*[Title/Abstract] OR accom*[Title/Abstract] OR hous*[Title/Abstract] OR home*[Title/Abstract] OR tenanc*[Title/Abstract]))) OR ("Hub and spoke"[Title/Abstract])	4,430,279
41	Adult [mh]	6,332,462
42	Adult*[Title/Abstract]	1,359,726
43	(Adult*[Title/Abstract]) OR (Adult [mh])	8,585,805
44	(("intellectual disability"[MeSH Terms] OR ("intellectual*"[All Fields] AND ("disab*"[Title/Abstract] OR "diso*"[Title/Abstract] OR "impairment*"[Title/Abstract] OR "retard*"[Title/Abstract] OR "defici*"[Title/Abstract])) OR ("mental*"[All Fields] AND ("disab*"[Title/Abstract] OR "impairment*"[Title/Abstract] OR "retard*"[Title/Abstract] OR "defici*"[Title/Abstract] OR	3737

"subnormal*"[Title/Abstract] OR "Handicap"[Title/Abstract]) OR "Idiocy"[Title/Abstract] OR "development disorder*"[Title/Abstract] OR "Handicap"[Title/Abstract] OR "learning disab*"[Title/Abstract] OR ("develop*"[All Fields] AND "disab*"[Title/Abstract]) OR "Amentia"[Title/Abstract] OR "Slow Learner"[Title/Abstract]) AND ("equipment and supplies"[MeSH Terms] OR "computing methodologies"[MeSH Terms] OR "self help devices"[MeSH Terms] OR ("rehabilitation"[MeSH Terms] AND ("instrumentation"[MeSH Subheading] OR "instrumentation"[All Fields] OR "instrumentation s"[All Fields] OR "instrumentational"[All Fields] OR "instrumentations"[All Fields] OR "instrumention"[All Fields])) OR "diffusion of innovation"[Title/Abstract] OR "technology"[MeSH Terms] OR ("technolog*"[All Fields] AND ("accept*"[Title/Abstract] OR "adopt*"[Title/Abstract] OR "develo*"[Title/Abstract] OR "implement*"[Title/Abstract] OR "dissemin*"[Title/Abstract])) OR (("assistive*"[Title/Abstract] OR "rehab*"[Title/Abstract] OR "Self help"[Title/Abstract] OR "Daily living"[All Fields]) AND ("technolog*"[Title/Abstract] OR "product*"[Title/Abstract] OR "device*"[Title/Abstract])) OR "universal design"[Title/Abstract] OR "Co-Design"[Title/Abstract] OR "Internet of things"[Title/Abstract] OR "smart home"[Title/Abstract] OR "digital technology"[Title/Abstract] OR "self help device"[Title/Abstract] OR "IOT"[Title/Abstract]) AND ("long term care"[MeSH Terms] OR "residential facilities"[MeSH Terms] OR "nursing homes"[MeSH Terms] OR "homes for the aged"[MeSH Terms] OR ("community*"[All Fields] AND ("living"[Title/Abstract] OR "accom*"[Title/Abstract] OR "hous*"[Title/Abstract] OR "home"[Title/Abstract] OR "tenanc*"[Title/Abstract] OR "comm*"[Title/Abstract] OR "facility"[Title/Abstract])) OR ("hous*"[Title/Abstract] OR "accom*"[Title/Abstract] OR "environment*"[Title/Abstract]) OR ("suppor*"[All Fields] AND ("lived"[All Fields] OR "lives"[All Fields] OR "living"[All Fields] OR "livings"[All Fields] OR "accom*"[All Fields] OR "hous*"[All Fields] OR ("home environment"[MeSH Terms] OR ("home"[All Fields] AND "environment"[All Fields]) OR "home environment"[All Fields] OR "home"[All Fields]) OR "tenanc*"[All Fields] OR "comm*"[All Fields] OR ("facilities"[All Fields] OR "facility"[All Fields] OR "facility s"[All Fields]))) OR ("resident*"[All Fields] AND ("living"[Title/Abstract] OR "accom*"[Title/Abstract] OR "hous*"[Title/Abstract] OR "home"[Title/Abstract] OR "tenanc*"[Title/Abstract] OR "com"[Title/Abstract] OR "facility"[Title/Abstract])) OR ("shelter*"[All Fields] AND ("living"[Title/Abstract] OR "accom*"[Title/Abstract] OR "hous*"[Title/Abstract] OR "home"[Title/Abstract] OR "tenanc*"[Title/Abstract] OR "comm*"[Title/Abstract] OR "facility"[Title/Abstract])) OR (("long"[All Fields] AND "term*"[All Fields]) AND ("living"[Title/Abstract] OR "accom*"[Title/Abstract] OR

| | "hous*"[Title/Abstract] OR "home"[Title/Abstract] OR "tenanc*"[Title/Abstract] OR "comm*"[Title/Abstract] OR "facility"[Title/Abstract])) OR "care home"[Title/Abstract] OR ("nurs*"[All Fields] AND "home*"[Title/Abstract]) OR ("assist*"[All Fields] AND ("living*"[Title/Abstract] OR "accom*"[Title/Abstract] OR "hous*"[Title/Abstract] OR "home*"[Title/Abstract] OR "tenanc*"[Title/Abstract])) OR "Hub and spoke"[Title/Abstract]) AND ("adult*"[Title/Abstract] OR "adult"[MeSH Terms])) AND (1989:2023[pdat]) | |

297

Appendix II: Data extraction instrument <level 1 heading>

Reviewer: Date:

Author(s) of the publication: Year:

Journal: Record Number:

Type of study:

Quantitative study

Qualitative study

Mixed methods study

Methodology: (eg, randomized controlled trial, phenomenology)

Number of participants:

Characteristics of participants:

Phenomena of interest:

Setting and other context-related information (eg, cultural, geographical):

Outcomes or findings of significance to the review objectives:

For a quantitative study, for example: Results ·   29% of survey participants reported feeling embarrassed having an asthma attack with friends; only 39% disclosed their asthma to friends. ·   32% were embarrassed about taking asthma medication in front of friends; only 38% reported taking asthma pump when going out.

| | Reference: (Cohen et al., 2003) |

322

323   For a qualitative study, for example:

Themes or Subthemes	Illustration (a direct quotation from a participant, an observation or other supporting data from the paper)
Parental support	"I can take my medicines by myself, but my parents remind me of taking the medicines and they fill prescriptions at the pharmacy. I always talk to the pediatrician or asthma nurse together with my parents." (Koster et al., 2015, p. 834)

324

325   Author's conclusion:

326

327   Reviewer's comments:

328