## APPENDIX A2: PRISMA Extension for Scoping Reviews (PRISMA-ScR)

| Section       | Item | Title                                                                 |
|---------------|------|----------------------------------------------------------------------|
| **Abstract**  |      | **Title:** Factors influencing informal carers’ acceptance of assistive telecare systems in the pre- and post-implementation phase: A scoping study |
| Structured summary | 2    | **Background:** Assistive telecare systems (ATSs) have great potential to be beneficial for informal carers (ICs) providing long-term care to older people (OP). However, little is known about ATS acceptance among ICs.  
**Objective:** This scoping study aims to investigate various factors that influence the ICs’ acceptance of ATSs over time in the pre- and post-implementation phases.  
**Design:** A five-stage scoping study was conducted. A systematic search of five bibliographic databases (Science Direct, Scopus, CINAHL, PubMED, and Proquest Social Sciences Database) was conducted in September 2020, supplemented by a round of grey literature searches. Using the established selection criteria, 37 publications published between 2000 and September 2020 were included. The data were analysed with Atlas.ti 8 using content-based analysis and a combination of deductive and inductive approaches.  
**Results:** The results show that work on understanding acceptance of ATS only gained wider attention after 2010. Seven key factors of ATS acceptance were identified: benefits and concerns about ATS, the care situation, the influence of the OP, carer characteristics, perceived need to use, and social influence. Several subfactors were also found. The post-intervention acceptance factors were found to be more nuanced than the pre-implementation factors, indicating that first-hand experience with ATSs enabled study participants to provide a more tangible, extensive, and in-depth overview of the various ATS acceptance factors.  
**Conclusions:** This scoping review is useful for ATS developers, providers, health and social care scholars and practitioners, policy makers, and commissioners, all of whom seek to improve and facilitate the provision of long-term care in the community. |
| **Introduction** |      | **Rationale:** Because care-related decisions, including the use of assistive telecare systems (ATSs), also depend on informal carers (ICs), we need to learn more about the role of ATSs in the caregiving situation and explore the relevant factors that affect ATS acceptance from the ICs’ perspective, which has been insufficiently studied so far. Particular attention should be paid to issues related to the perceived trade-off between independence/autonomy and safety in relation to ATS use, also taking into account the temporal dimension of the study (i.e., whether the factors were identified in the pre- or post-adoptive period) to develop and deploy appropriate ATSs. In this scoping study, we aim to provide a comprehensive analysis of factors that influence ICs’ acceptance of ATSs in the pre- and post-implementation phases to inform future research and action. |
| **Objectives** | 4    | The objective of this study is to systematically examine the state-of-art in research on the following research question: What factors influence the acceptance of assistive telecare systems (ATSs) by informal carers (ICs) of older people (OP) in the pre- and post-implementation phases? |
| **Methods**    |      | This scoping review followed established guidelines for scoping method reviews:  
- Arksey, H.; O’Malley, L. Scoping Studies: Towards a Methodological Framework. *Int. J. Soc. Res. Methodol.* 2005, 8 (1), 19–32.  
  [https://doi.org/10.1080/1364557032000119616](https://doi.org/10.1080/1364557032000119616).  
- Levac, D.; Colquhoun, H.; O’Brien, K. K. Scoping Studies: Advancing the Methodology. *Implement. Sci.* 2010, 5 (1), 69.  
  [https://doi.org/10.1186/1748-5908-5-69](https://doi.org/10.1186/1748-5908-5-69).  
- 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.; Akil, E. A.; Chang, C.; McGowan, J.; Stewart, L.; Hartling, L.; Aldcroft, A.; Wilson, M. G.;
Garrity, C.; Lewin, S.; Godfrey, C. M.; Macdonald, M. T.; Langlois, E. V.; Soares-Weiser, K.; Moriarty, J.; Clifford, T.; Tunçalp, Ö.; Straus, S. E. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann. Intern. Med. 2018, 169 (7), 467–473. https://doi.org/10.7326/M18-0850.

The protocol of the review is explained in the accompanying article.

### Eligibility criteria

6 With the aim of finding all relevant literature, we limited our search to English-language publications published between the year 2000 and September 2020. To update the results, the search was repeated before publication for 2020 and 2021. Content eligibility criteria are explained in Table 1 (see article).

### Information sources

7 The first search was conducted between September 18 and 20, 2020, in five selected bibliographic databases (Science Direct, Scopus, CINAHL, PubMed and Proquest Social Sciences Database). A search update was conducted on January 3, 2022, repeating the original search strategy in all bibliographic database search engines to review articles published between September 18, 2020, and December 31, 2021. The aim was to complete the analysed sample and provide the most up-to-date review of published papers. Therefore, the only adjustment to the search strategy was to restrict the search to the date of publication. However, the search could only be restricted by year (not by exact date), so the updated search included units published in 2020 and 2021. All items were reviewed for eligibility.

### Search

8 A basic search strategy was created by combining three sets of related keywords:

\[
\text{ALL ("family care\*" OR "informal care\*" OR "family caregive\*") AND (telecare OR ecare OR telehomecare OR telesurveillance) AND ("acceptance factor\*" OR "acceptability factor\*" OR acceptance) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (DOCTYPE , "ar"))}
\]

Modifications were made to some search strategies due to limitations of the database search options:

| Database                      | Search strategy                                                                 | Search fields |
|-------------------------------|---------------------------------------------------------------------------------|---------------|
| Scopus                        | ALL ("family care\*" OR "informal care\*" OR "family caregive\*") AND (telecare OR ecare OR telehomecare OR telesurveillance) AND ("acceptance factor\*" OR "acceptability factor\*" OR acceptance) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (DOCTYPE , "ar")) | ALL           |
| Science Direct                | Modified, due to search engine limitations (several search strategies conducted with the following keywords): | Title, abstract, keywords (TITLE-ABS-KEY) |
|                               | ("family carer" OR "informal carer" OR "family caregiver") AND (telecare OR ecare OR telehomecare OR telesurveillance) AND ("acceptance factors" OR "acceptability factors" OR acceptance) |               |
| CINAHL                        | ALL ("family care\*" OR "informal care\*" OR "family caregive\*") AND (telecare OR ecare OR telehomecare OR telesurveillance) AND ("acceptance factor\*" OR "acceptability factor\*" OR acceptance) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (DOCTYPE , "ar")) | ALL           |
| ProQuest Social Sciences Database | ("family care\*" OR "informal care\*" OR "family caregive\*") AND (telecare OR ecare OR telehomecare OR telesurveillance) AND ("acceptance factor\*" OR "acceptability factor\*" OR acceptance) | ALL           |
| PubMed                        | ("family care\*" OR "informal care\*" OR "family caregive\*") AND (telecare OR ecare OR | ALL           |
| Section                                      | Item | Details                                                                                                                                                                                                 |
|----------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Selection of sources of evidence             | 9    | To ensure consistency among reviewers, two reviewers screened all articles for title and abstract. Any discrepancies were resolved in the discussion of each article. In addition, all publications deemed eligible at this stage were fully reviewed again by the two researchers. Thus, the final sample consisted of articles that were reviewed and coded by two researchers. In cases of doubt, a third reviewer was consulted and the decision was made by consensus of all authors of the analysis. |
| Data charting process                        | 10   | A data-charting form was jointly developed by the three co-authors of this analysis to determine the variables to be extracted. The data-charting was divided into two parts:  
- An Excel spreadsheet to record the relevant characteristics of the publications and research papers (to provide the data for Table 2: Characteristics of the studies).  
- Coding of acceptance factors was performed separately in Atlas.ti software. The full-text review and coding were approached with a sequential process that ensured reliability and validity. This was guaranteed by employing CQA procedure (Glasser & Strauss, 1967; Richards & Hemphill, 2017) and establishment of a clear protocol and codebook as highlighted by Gibbert et al. (2018). Thus, the two researchers divided the sample of publications so that one of the coders did the first round of coding for half of the publications, which was further reviewed by the second researcher. All codes for the publications have thus been agreed upon by the two main researchers and reviewed by the third co-author. |
| Data items                                   | 11   | We abstracted data on article characteristics, i.e., author(s), year of publication, research aim/objective, country, study type and data collection, study cases, age of ICs, telecare devices within ATSs, PRE- and POST-implementation, dementia of OP, key findings, etc. The final version of the charting form is included in the article as Table 2. The main item of the coding process was the acceptance factors. The final categories of acceptance factors identified are presented in Table 3 (Factors influencing the acceptance of ATS by ICs of OP in the pre- and post-implementation phase). |
| Critical appraisal of individual sources of evidence | 12   | Because this step is optional in scoping studies, no additional critical appraisal of the units in the analysis took place. Nevertheless, all articles included in this study were published in scientific journals and peer-reviewed, so we assume acceptable validity and reliability of the research summarised in the analysis. |
| Summary measures                             | 13   | Not applicable for scoping reviews.                                                                                                                                                                       |
| Synthesis of results                         | 14   | We grouped the studies according to pre- and post-implementation reported factors, and summarised the results for each group. In addition, the analysis involved detailed coding of the factors, which were then analysed for content and grouped into categories and themes. The data and analysis are presented in tables (Table 2 and Table 3) and summarised in a narrative format. The final presentation of the themes and their interrelationships are presented in Figure 2. |
| Risk of bias across studies                  | 15   | Not applicable for scoping reviews.                                                                                                                                                                       |
| Additional analyses                          | 16   | Not applicable for scoping reviews.                                                                                                                                                                       |
| Results                                      | 17   | The selection of sources is presented in detail in the article and illustrated in the PRISMA diagram:                                                                                                         |
Characteristics of sources of evidence 18 | Characteristics for each source of evidence are presented in Table 2: Characteristics of studies.

Critical appraisal within sources of evidence 19 | As this step is optional in scoping studies, there was no additional critical appraisal of the units in the analysis.

Results of individual sources of evidence 20 | Identified acceptance factors per each source of evidence are presented in Table 2: Characteristics of studies (column Identified acceptance factors).

Synthesis of results 21 | The analysis revealed seven key factors that influenced acceptance and adoption, presented in Figure 2: Key factors of the acceptance of assistive telecare systems by informal carers of older people.

Risk of bias across studies 22 | Not applicable for scoping reviews.

Additional analyses 23 | Not applicable for scoping reviews.

Discussion 24 | Our study found seven key factors that influenced acceptance and adoption. The most frequently mentioned factors were the benefits and concerns about ATs, followed by the care situation and the influence of the OP. In addition, carer...
characteristics, perceived need to use, and social influence were identified as influencing factors. Several subfactors were found. Differences were found between the pre- and post-intervention acceptance factors, especially when considering subfactors. For example, social policy for care was a more prominent subfactor in the pre-implementation phase than in the post-implementation phase. The psychological outcomes of ATS use, positive perceptions of ATS, concerns about equipment and service features, characteristics, and needs of the OP, time-space organisation of care, and benefits of ATSs for OP seemed to be more important in the post-implementation phase than in the pre-implementation phase. These findings indicate that testing ATSs in practice resulted in a rich array of first-hand and realistic user experiences, which in turn provided a more varied and detailed overview of post-implementation acceptance factors.

| Section | Item |
|---------|------|
| Limitations | 25 First, it is important to appreciate the characteristics of the scoping study methodology in terms of its advantages and shortcomings. The latter lie primarily in its descriptive nature; the lack of a systematic assessment of the quality of the studies limits to some extent the generalisability of the findings. Nevertheless, the strength of this approach is that it provides a comprehensive overview and synthesis of available resources. Second, there is the possibility of selection bias resulting from the limitations of the databases and search engines selected, as well as the selection process. This was addressed with an iterative evaluation of the inclusion criteria by two researchers, with the aim of reaching agreement in cases of disagreement. It is also possible that we did not include all relevant studies due to the apparently large amount of grey literature identified (alerting us to the terminological diversity of published work in this area). This may be particularly evident when reviewing work on ICs of people with dementia, which should be further explored in terms of their specific needs. The fact that only English-language and online studies were included may contribute to the exclusion of relevant literature. Finally, the vast majority of the selected studies relate to developed countries, so further research should include a broader range of countries. |
| Conclusions | 26 This work contributes to a better understanding of the acceptance factors of new technologies for ageing in place by adding the perspective of ICs to the existing knowledge on OP’s acceptance of ATSs. The fact is that OP and ICs engage together in the use of ATSs and therefore often make joint decisions about it. Further research is needed that relates ATS acceptance factors in a “care partnership,” i.e., in the dyad between the person in need of care and the person responding to that need for care. Further research is also needed to capture the complexity of the acceptance process by ICs in the pre- and post-implementation phases. As health and social care professionals play an important role in both the decision-making process and the actual use of ATSs, this role should be explored, including the perspective of their potential lack of knowledge of ATSs. The limitation of our framework is that some factors appear under “benefits” and “concerns” related to technologies, which makes empirical evaluation difficult. Therefore, our framework of acceptance should be extended so that eventual empirical validation of this framework will be easier. Our findings can be used by ATS developers and providers, as well as by health and social care professionals, to better understand the complex nature of the ATS acceptance process. |
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Additional references:

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Glasser, B. G., & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Adline.

R. Richards, K. A., & Hemphill, M. (2017). A Practical Guide to Collaborative Qualitative Data Analysis. *Journal of Teaching in Physical Education, 37*, 1–20. https://doi.org/10.1123/jtpe.2017-0084

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