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Nursing, Frailty and Functional Decline in Relation to Older People in Long-term Care Contexts: A Scoping Review Protocol

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ABSTRACT

Introduction: Older people receiving healthcare in long-term care contexts are a heterogeneous population, and they are especially vulnerable to developing frailty and functional decline. Considering the negative effects associated with these conditions and the possibility of preventing them from progressing, it is vital that nurses possess a broad knowledge base about them. The management of care—including detecting and preventing signs and symptoms of frailty and/or functional decline—lies within nurses' range of responsibilities. Such knowledge could guide the development of effective models of care, ensuring continuity and, hence, quality of care. Our objective will be to review published literature on existing models of care targeting frailty and/or functional decline and how these conditions are described by older people themselves, significant others, and nurses in relation to long-term care.

Methods and analysis: The review will be conducted in accordance with Arksey and O'Malley's methodological framework. Recent methodological developments will be considered. PubMed, CINAHL and PsycINFO will be searched. Eligibility criteria will be peer-reviewed papers and written in English. All types of study designs will be eligible and included papers will be quality assessed. Older people, significant others, and nurses with experiences from the long-term context will be consulted for the confirmation of the findings. The PRISMA-P checklist for protocols and the PRISMA-ScR checklist were followed in this paper.

Ethics and dissemination: Papers eligible for inclusion will be assessed for ethical quality. The findings will be published in an open-access, peer-reviewed journal. Additionally, the findings will be utilised in a research project following the Medical Research Council's framework for developing and evaluating complex interventions. The latter will support us in developing a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

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Strengths and limitations of this study:

- Designing and reporting the protocol and upcoming scoping review in accordance with the PRISMA checklists will ensure the transparency, reliability and rigour of the review.
- The support of an information specialist in developing a comprehensive search strategy will ensure a higher probability of identifying eligible papers.
- Using a review team of five individuals will ensure independent assessment by two reviewers in all stages, as well as the opportunity to consult with a third person if necessary.
- Adopting a joint strategy of quality assessment and comprehensive overview may contribute to both identifying the gaps in the literature, as well as increasing the uptake and relevance of the results for practice and policy makers.
- Not including stakeholders in the conception and designing of this review might be a limitation.

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INTRODUCTION

Considering the potential adverse health outcomes of frailty and functional decline,[1 2] as well as the potential reversibility of these conditions,[3] there is an undeniable need for effective models of care for the early detection and prevention of frailty and functional decline among older people in long-term care contexts (e.g., home healthcare, sheltered housing and nursing home contexts).[4] Preventing frailty and functional decline as a part of a healthy ageing strategy is a globally important aim and has been promoted by both the European Commission and World Health organisation (WHO).[5 6] Despite their global attention, both conditions are repeatedly described as closely related, and the terms are often used interchangeably.[7 8] The nature of their relationship has been debated, even though the consensus appears to be that frailty predicts functional decline and disability.[3 9] Our upcoming scoping review will depart from the idea of such a relationship.

It is well known that we live longer and, hence, are at an increased risk of multimorbidity, polypharmacy and the presentation of complex symptoms.[10] This indicates that the number of older people with frailty and at risk of functional decline[7 10 11] also is likely to substantially increase. The prevalence of frailty tends to vary, which might be because of the use of numerous definitions and screening instruments but also because frailty tends to increase with age.[12] Among community-dwelling older people (60+), the prevalence of frailty has been estimated to be between 2.6% and 60%[13 14] and for nursing home patients between 19% and 75.6%.[14 15] Frailty has also been associated with increased healthcare-related costs.[16] The early detection and preventative healthcare measures targeting these two conditions in long-term care contexts seems vital both for the healthcare offered and the quality of care for older patients. Unfortunately, such measures are challenging for several reasons.

First, older people receiving healthcare services in long-term care contexts are a heterogeneous population; they range from being relatively independent and in need of low-intensity care to being dependent on a range of activities of daily living (ADL) and in need of high intensity care.[10] Furthermore, it is fair to assume that through, for example, informal caregivers, these individuals' deteriorations might be compensated for and delayed over a longer period of time, thereby masking their actual care needs. This complex composition within both the population and the individuals themselves – masking actual care needs – increases the risk of adverse health outcomes because of the difficulties to detect the conditions.

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Second, there is a growing number of older people ageing in place—that is, staying in their own homes.[17] This trend is believed to contribute to appropriate care at a lower cost compared with institutionalised care.[18 19] Furthermore, according to Boland, et al. [20] there is insufficient evidence related to health-related outcomes to recommend either institutionalised care or home healthcare. Emphasising the preference of the older person when considering moving the locations of care should be taken into account. Research implies that most older people value their independence and prefer to remain in a familiar environment where they feel like they belong.[17] Stressing the importance of detecting and preventing conditions such as frailty and/or functional decline early on in this population. This might result in positive implications when it comes to their possibility for healthy ageing[5 21] and contribute to more older people having the choice of ageing in place.[17 21 22] However, it has been documented that long-term care services experience limitations related to the following: time with patients, number of healthcare staff with adequate competence, collaboration with other professions, guidelines and protocols for care, high rates of sick leave, part-time workers and nurse retention.[22-24] This might increase the risk of nursing staff (e.g., registered nurses, registered practical nurses, licensed practical nurses, and nursing assistants/aides)[25]—hereinafter referred to as nurses—being forced to ration care.[26] This may result in patient monitoring being less prioritised and a further rationing of care that might lead to the signs and symptoms related to frailty and/or functional decline going unobserved. This can risk both patient safety and satisfaction.[27]

Third, a prerequisite for detecting and preventing frailty and/or functional decline is a clear definition and understanding of the concepts, both medically and clinically. A number of definitions have been proposed, yet no consensus exists.[8 28] In the upcoming scoping review, frailty will be understood in accordance with Clegg et al.'s[29] description as *'a state of vulnerability to poor resolution of homoeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime'* (p. 1). A critical point in the degenerative processes is reached where the homeostatic mechanisms are no longer sufficient. This results in vulnerability, that is, a seemingly small incidence (new drug or a 'minor' infection), having a disproportionate effect on the individual's health.[29] This then increases the risk of adverse health outcomes such as falls, hospitalisation, disability and death.[1 2] Furthermore, the dependency in ADLs in people with frailty may fluctuate substantially. This is often referred to as 'unstable disability',[29] and we postulate that such fluctuating disability could be understood as functional decline.

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For the upcoming review, functional decline will be defined as a new loss of independence in self-care activities or as a deterioration in self-care skills, here as measured on an ADL scale (e.g., bathing, dressing, transferring from bed to chair, using the toilet, etc.) and/or on an instrumental activities of daily living (IADL) scale (e.g., shopping, housekeeping, preparing meals, etc.).[30 31] Functional decline among older people can also result in compromises beyond ADL for example physical problems such as falls and malnutrition and psychosocial problems such as depression and delirium.[32] According to Hébert [33] functional decline may manifest subacutely or acutely. Subacute functional decline slowly develops over time and is more difficult to detect than acute functional decline, particularly if the patients are not screened for physical or mental capacity changes. Usually, this is caused by chronic disease or a new, undetected disease, but it may also arise because of polypharmacy, cognitive decline or a psychiatric condition. Acute functional decline often manifests in a couple of days to a week and requires emergent medical attention and hospitalisation. It can be caused by an acute incident (e.g., infection, fall or stroke), malfunction in compensatory mechanisms of a chronic condition or a psychological crisis (e.g., death of a significant other or hospital admission).

Among healthcare professionals, nurses are the largest professional group. They are often the first point of contact, and they are also the group that spends the most time with the patients. Thus, the management of care, including detecting and preventing the signs and symptoms of frailty and/or functional decline, lies both within their remit and range of responsibilities. Despite this, we have not been able to identify any published reviews summarising the evidence within this field. Instead, recent reviews have focused on areas such as the effect of interventions[34-37] and screening tools.[38-40] Furthermore, we might argue that to develop effective models of care related to these conditions, it is critical to understand how frailty and functional decline might be described beyond our medical understanding and by important stakeholders.

Additionally, nurses are expected to provide a diverse range of healthcare services, and one of their functions is to assess, diagnose, intervene and evaluate a patient's personal health needs.[41 42] Consequently, nursing staff can play a major role in delivering a safe and evidence-based practice that involves detecting and establishing appropriate care actions for older people, regardless of their conditions. Working in accordance with structured and logical (effective) models of care to detect, prevent or postpone frailty and/or functional decline among older people in long-term care is vital. Hence, our objective will be to review the literature on existing models of care, frameworks and approaches targeting frailty and/or functional decline, as well

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as how these two conditions are described and understood by older people themselves, their significant others, and nurses in relation to long-term care.

METHOD AND ANALYSIS

The upcoming scoping review will be conducted in accordance with Arksey and O'Malley's [43] methodological frameworks for conducting scoping studies. Additionally, methodological developments will be considered, that is, Levac, et al. [44] and Daudt, et al. [45] Scoping reviews are preferred when the research area has not previously been comprehensively reviewed and is of a complex nature.[43] The included papers will undergo ethical and critical appraisal,[44 46 47] relevant data will be extracted,[44 48] and data answering the review questions will be analysed by content analysis.[49]

This protocol will utilise the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist,[50] as well as the PRISMA-P checklist for reporting protocols (Supplementary file 1-2),[51] which is recommended for scoping reviews and systematic reviews.[52] As recommended, the upcoming review is registered in the Open Science Framework (OSF) (registration number 10.17605/OSF.IO/FNHSA. Registered and last updated on 30 June 2021).

Stage 1: Identifying the research question

In accordance with Arksey and O'Malley [43] tentative and broad research questions were formulated following the PICoS (Population, Phenomenon of Interest, Context and Study design) framework (Table 1). In accordance with the iterative approach of a scoping review, the tentative research questions may be reformulated as we gain familiarity with the research area.[43]

- What models of care, frameworks and approaches targeting the detection and prevention of frailty and/or functional decline among older people are described in long-term care contexts?
- How is the concept of frailty described and understood by older people, their significant others, and nurses in long-term care contexts?
- How is the concept of functional decline described and understood by older people, their significant others, and nurses in long-term care contexts?

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Furthermore, subquestions will encompass the following: By whom are the questions in the literature answered, in what specific contexts, in relation to whom or what? Which research designs have been utilised? How is the methodological quality appraised?

Table 1. PICoS framework for determination of eligibility of review questions

Criteria	Determinants
Population	- Older people (65+ years) - Significant others - Nurses
Phenomenon of Interest	- Descriptions of models of care, frameworks and approaches targeting detection and prevention of frailty and/or functional decline among older people - Descriptions of frailty and/or functional decline among older people
Context	- Long-term care, e.g., home healthcare, sheltered housing and nursing homes
Study design	- All study designs

Stage 2: Identifying relevant studies

Systematic searches will be conducted in PubMed, CINAHL and PsycINFO. These databases cover the majority of the published, peer-reviewed health service research. The search strategies will be constructed following the PICoS categories and will be tailored to each database. To achieve a comprehensive search strategy with sensitivity and specificity, we will include both controlled subject headings such as MeSH,[53] as well as keywords and synonyms. No time limitation will be implemented because of the lack of earlier reviews and the aim to comprehensively map the area of interest.[43] A preliminary search strategy was constructed for PubMed in collaboration with an information specialist at Karlstad University (Supplementary File 3, last updated on 19 January 2022). Additionally, the reference lists of all the included papers will be searched.[43 53 54] The final search strategy for each database will be checked by an independent information specialist using the PRESS checklist.[53] To ensure transparency in the iterative process, the first author will keep a logbook throughout the entire project to track amendments from this protocol and other decisions made, including the rationale.[54 55] Considering what types of research will most likely be relevant for answering our research questions, as well as the time and resources needed searching for grey literature,[54] we have decided to include only published, peer-reviewed research.

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Stage 3: Study selection

To ensure consistency, reliability and validity in the selection process, eligibility criteria will be constructed.[44] A tentative summary of the eligibility criteria is described below. Still, in accordance with the iterative process, the eligibility criteria might be refined as familiarity with the field increases and can then be applied to all citations post hoc.[43]

Using the eligibility criteria, two independent reviewers will assess the relevance of all titles and abstracts in the search results. The full text of the relevant papers, as well as those where relevance is unclear, will be assessed for inclusion[43] by two reviewers.[44 45] Meetings will be held regularly to address any uncertainties.[44] Disagreements will be resolved through discussion and, if necessary, consultation with a third reviewer. The selection process will be documented using the PRISMA flowchart[56] (Figure 1). The data programme Rayyan will be utilised using the option 'blind on' to ensure an independent review.[57]

Insert --- Figure 1. about here ---

The eligibility criteria relate to the categories in PICoS, as well as the research type, language and ethical considerations. The population will be limited to older people, their significant others, and nurses. Older people will be defined as all people over the age of 65 years, considering that this is a standard cut-off for older people in most research and databases today. Because there exists no consensus definition of frailty or functional decline, we will use the definitions presented in the introduction of this protocol as the inclusion criteria. The context will be defined as long-term care contexts, for example, home healthcare, sheltered housing and nursing homes. All study designs will be included. Because the aim of the review is to summarise evidence from published, peer-reviewed research, we will exclude research types not complying with these parameters, such as letters to the editor and discussion papers. Considering time and resources, we will only include papers that do not need translation, that is, those in English. There is a rising appreciation of the contribution that ethical quality assessment in reviews may have on sustainable and ethical research.[46 47] To contribute to this work, we have constructed a tentative list of the ethical requirements for the included papers, as influenced by Weingarten, et al. [46] (Table 2). Depending on the total number of eligible papers and the overall methodological and ethical quality, a decision regarding excluding papers of subpar standards will be made.

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Table 2. Ethical requirements

Was the study approved by an ethical research committee?	Yes/No
Was informed consent retrieved from all participants?	Yes/No
Were the personal data/transcriptions/recordings properly managed, stored and disposed off?	Yes/No
Was the relevance of the study clearly justified?	Yes/No
Was any conflict of interests or funding declared?	Yes/No

Stage 4: Charting the data

A data charting form will be utilised to facilitate the systematic charting of data from each paper (Box 1). Two reviewers will independently pilot this form on the first five to ten relevant papers. If necessary, the form will be augmented.[44 48] When finalised, two independent reviewers will apply the form to all relevant papers. Disagreements will be resolved by discussion with the review team, if needed.

Box. 1 Tentative data charting items

Full reference
Aim
Population
Phenomenon of Interest
Country and Context
Study design
Data collection method
Data analysis
Relevant findings
Quality assessment

Quality appraisal in scoping reviews is a topic of debate, with researchers both for[44 45 58] and against it.[43 48] Despite this all the included papers will be quality assessed but included regardless of the results. No weighting of the evidence will be done;[43] rather, a quality assessment will be utilised to identify potential gaps in the literature related to high-quality research.[44] The quality assessment will be conducted by two independent reviewers using the checklists from the Critical Appraisal Skills Programme (CASP).[59] For mixed method studies, the mixed method appraisal tool will be applied.[60]

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Stage 5: Collating, summarising and reporting the results

The charted data will be presented both schematically and narratively. Numerical analysis of the quantitative data will be descriptive and focus on the nature, extent and distribution of the data. How the results are presented will depend on the findings (e.g., tables, chart, figures).[48] As recommended by Levac, et al. [44] qualitative content analysis with a focus on the manifest content will be implemented.[49] Using a descriptive approach and focusing on manifest content entails a very low degree of interpretation.[61] This is in accordance with the aim of summarising—not synthesising—evidence in a scoping review.[43] Additionally, the PAGER framework will be considered.[62] Two reviewers will be responsible for this stage, and regular meetings will be conducted with the whole review team.

Stage 6: Consulting stakeholders and experts

Consulting with different experts and stakeholders will be done through different parts of the review to validate the entire process and end results. First, through consulting with the information specialist, the search strategies will be validated.[55] Second, to investigate the concordance between the review results and views of relevant stakeholders, we will present the tentative results to a discussion group[63] consisting of older people, their significant others and nurses. If relevant, we will adjust the presentation of the results or the categories or remark on potential deficiencies in the data from the included papers. This will assist in assessing if the results are relevant for the stakeholders.[44]

Patient and public involvement

No patients are involved in the conception or design of the upcoming review, but both patients, their significant others and healthcare professionals will be involved in validating the review results through discussion groups.

ETHICS AND DISSEMINATION

Despite reviews being excluded from ethical assessment by ethical review authorities,[64-66] the need for ethical considerations when conducting reviews has been highlighted by Vergnes, et al. [47] and Weingarten, et al. [46] We will contribute to this by considering the ethical standards of all eligible papers.

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Furthermore, to ensure an effective literature review, as well as avoid research waste,[67] we have conducted a thorough exploratory search to assess the need for the upcoming review. The ethical importance of writing this protocol should also be mentioned because protocols alongside the precise logging of amendments in the final review manuscript are an important part of making our review transparent to criticism.

As part of the scoping review design, disseminating the results will begin through consultation with stakeholders and experts. Furthermore, the scoping review will be published in a peer-reviewed, open-access journal. Tentatively, the findings will be reported by early autumn 2022. Additionally, the findings will be utilised in a research project following the Medical Research Council's framework for developing and evaluating complex interventions[68] to inform the development of a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

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AUTHORS' CONTRIBUTIONS

IRF, GB, ERG, AJ-E and EL-O were responsible for the study's inception and design. IRF was responsible for drafting the first version of the manuscript. GB, ERG, AJO and ELO were responsible for the critical revision of the paper and for adding important intellectual content. GB supervised the study. All authors read and approved the final manuscript.

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COMPETING INTERESTS STATEMENT

The authors of this scoping review protocol declare no competing interests in connection with this manuscript.

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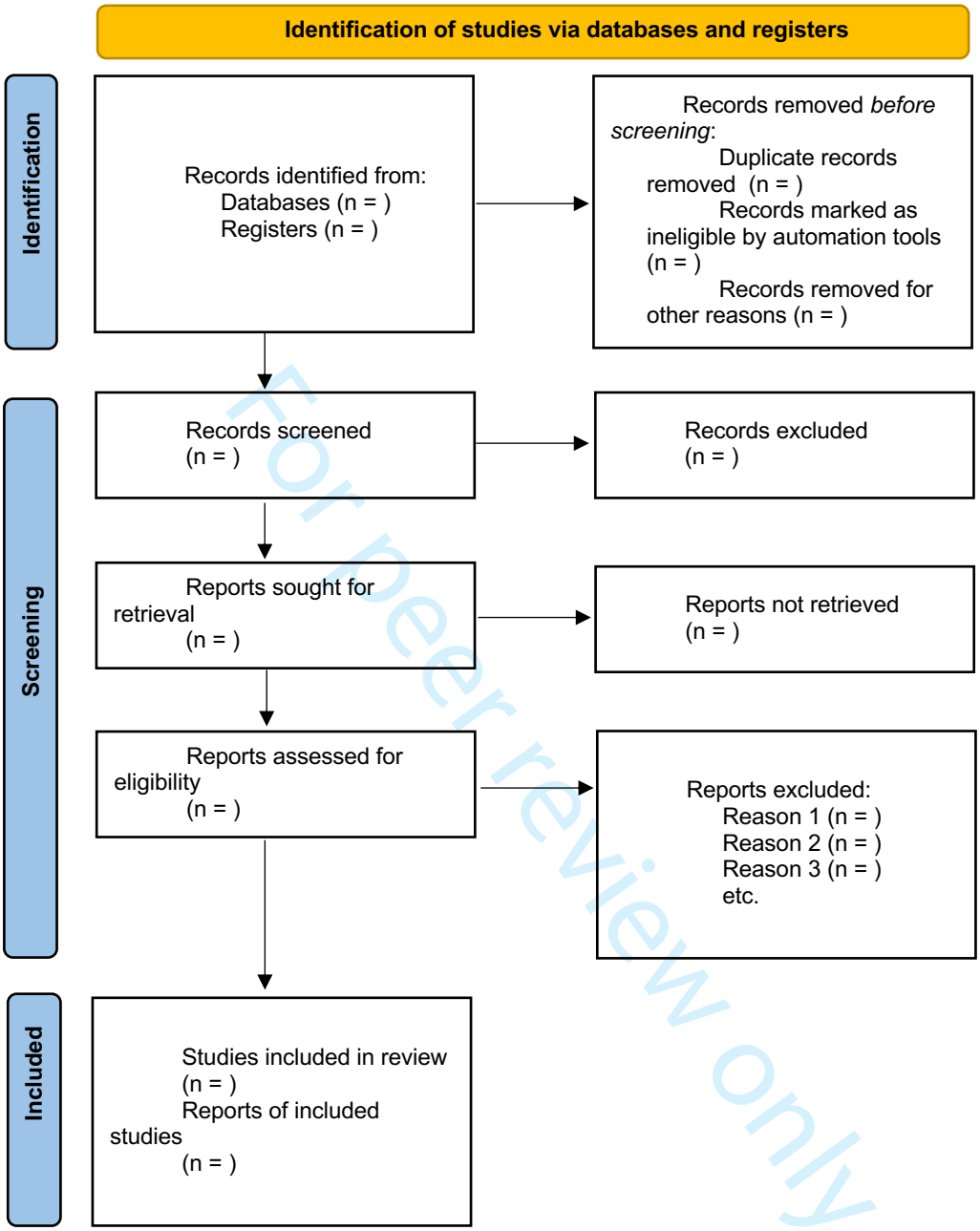
Figure 1. PRISMA-flowchart: Overview of the study selection process



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SUPPLEMENTARY FILE 1

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Title page
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3-6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	5-6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	6

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	7
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplementary File 3
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	8
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	9
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Box 1

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	9
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Not applicable for the protocol
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Not applicable for the protocol
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable for the protocol
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Not applicable for the protocol
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Not applicable for the protocol
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of	Not applicable for the protocol

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	Not applicable for the protocol
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Not applicable for the protocol
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850

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SUPPLEMENTARY FILE 2

PRISMA-P 2015 Checklist

This checklist was retrieved by the authors of this protocol from the PRISMA web page, and is an adapted version of Table 3 in Moher, et al. [52]: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement.

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	Title page
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	1 and 6
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	11
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☒	☐	7
Support					
Sources	5a	Indicate sources of financial or other support for the review	☐	☒	11

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
					No funders/ sponsors
Sponsor	5b	Provide name for the review funder and/or sponsor	☐	☒	Not applicable
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☐	☒	Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	3-6
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	6
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	8
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	7
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	Supplementary File 3
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	8
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	8

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Section/topic	#	Checklist item	Information reported: Yes	Information reported: No	Page number(s)
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	9
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	Box 1
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	Box 1
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	9
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☐	☒	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	10
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☐	☒	

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SUPPLEMENTARY FILE 3

Tentative search strategy: PubMed

Last updated on: 19.01.22

Question 2: How is the concept of frailty described and understood by older people, their significant others, and nurses in long-term care contexts?

PubMed	**Search block: Older people (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#1	Aged	"aged"[MeSH Terms] OR "aged"[All Fields]	5,765,926
#2	Elderly	"aged"[MeSH Terms] OR "aged"[All Fields] OR "elderly"[All Fields] OR "elderlies"[All Fields] OR "elderly s"[All Fields] OR "elderlys"[All Fields]	5,823,455
#3	Older	"older"[All Fields] OR "olders"[All Fields]	496,898
#4	Combination:	**#1 OR #2 OR #3**	5,978,243

PubMed	**Search block: Significant others (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#5	Significant others	"significant"[All Fields] AND "other*"[All Fields]	763,016
#6	Informal caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("informal"[All Fields] AND "caregiver*"[All Fields])	92,958
#7	Family	"family"[MeSH Terms] OR "family"[All Fields] OR "families"[All Fields] OR "family s"[All Fields] OR "familys"[All Fields]	1,542,673
#8	Relatives	"relative"[All Fields] OR "relatives"[All Fields] OR "relative s"[All Fields]	984,365
#9	Family caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("family"[All Fields] AND "caregiver*"[All Fields])	92,958
#10	Spouses	"spouse s"[All Fields] OR "spouses"[MeSH Terms] OR "spouses"[All Fields] OR "spouse"[All Fields]	34,339
#11	Husbands	"husband s"[All Fields] OR "husband"[All Fields] OR "husbands"[All Fields]	14,379
#12	Wives	"wife"[All Fields] OR "wives"[All Fields] OR "wife s"[All Fields]	11,491
#13	Next-of-kin	"Next-of-kin"[All Fields]	1,920
#14	Combination:	**#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13**	3,174,444

PubMed	**Search block: Nursing staff (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#15	Nurse	"nurse s"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR "nurse"[All Fields] OR "nurses s"[All Fields]	408,405

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#16	Nursing personnel	"nursing staff"[MeSH Terms] OR ("nursing"[All Fields] AND "staff"[All Fields]) OR "nursing staff"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields]) OR "nursing personnel"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields])	365,108
#17	Healthcare assistants	"allied health personnel"[MeSH Terms] OR ("allied"[All Fields] AND "health"[All Fields] AND "personnel"[All Fields]) OR "allied health personnel"[All Fields] OR ("healthcare"[All Fields] AND "assistants"[All Fields]) OR "healthcare assistants"[All Fields]	56,879
#18	Healthcare aides	("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields]) AND "aides"[All Fields]	1,248
#19	Nursing assistants	"nursing assistants"[MeSH Terms] OR ("nursing"[All Fields] AND "assistants"[All Fields]) OR "nursing assistants"[All Fields]	8,416
#20	Nursing aides	("nursing"[MeSH Terms] OR "nursing"[All Fields] OR "nursings"[All Fields]) AND "aides"[All Fields]	1,843
#21	Formal caregivers	("formal"[All Fields] OR "formalized"[All Fields]) AND ("caregivers"[All Fields] OR "caregivers"[MeSH Terms] OR "caregivers"[All Fields] OR "caregiver"[All Fields] OR "caregiving"[All Fields])	2,921
#22	Combination:	**#15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21**	526,064

PubMed	**Search block: Frailty (I)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#23	Frail	"frail"[All Fields] OR "frails"[All Fields] OR "frailty"[MeSH Terms] OR "frailty"[All Fields] OR "frailness"[All Fields]	34,147

PubMed	**Search block: Long-term care (C)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#24	Long-term care	"long term care"[MeSH Terms] OR ("long term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields] OR ("long"[All Fields] AND "term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields]	158,645
#25	Primary care	"primary health care"[MeSH Terms] OR ("primary"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "primary health care"[All Fields] OR ("primary"[All Fields] AND "care"[All Fields]) OR "primary care"[All Fields]	519,348
#26	Community healthcare	"community health services"[MeSH Terms] OR ("community"[All Fields] AND "health"[All Fields] AND "services"[All Fields]) OR "community health services"[All Fields] OR ("community"[All Fields] AND "healthcare"[All Fields]) OR "community healthcare"[All Fields]	453,397
#27	Community dwelling	"independent living"[MeSH Terms] OR ("independent"[All Fields] AND "living"[All Fields]) OR "independent living"[All Fields] OR ("community"[All Fields] AND "dwelling"[All Fields]) OR "community dwelling"[All Fields]	55,793
#28	Community nursing	("community"[All Fields] AND "nursing"[All Fields]) OR "community nursing"[All Fields]	85,995
#29	Home healthcare	("home environment"[MeSH Terms] OR ("home"[All Fields] AND "environment"[All Fields]) OR "home environment"[All Fields] OR "home"[All Fields]) AND ("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields])	68,971
#30	Home nursing	"home nursing"[MeSH Terms] OR ("home"[All Fields] AND "nursing"[All Fields]) OR "home nursing"[All Fields]	72,058

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#31	Nursing home	"nursing homes"[MeSH Terms] OR ("nursing"[All Fields] AND "homes"[All Fields]) OR "nursing homes"[All Fields] OR ("nursing"[All Fields] AND "home"[All Fields]) OR "nursing home"[All Fields]	99,292
#32	Combination:	**#24 OR #25 OR #26 OR #27 OR #28 OR #29 OR 30 OR #31**	1,155,165

PubMed	**Combination of blocks**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#33	Combination (P):	**#4 OR #14 OR #22**	8,752,419
#34	Combination (PIC):	**#23 AND #32 AND #33**	11,877

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Nursing, Frailty, Functional Decline and Models of Care in Relation to Older People Receiving Long-term Care: A Scoping Review Protocol

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Nursing, Frailty, Functional Decline and Models of Care in Relation to Older People Receiving Long-term Care: A Scoping Review Protocol

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ABSTRACT

Introduction: Older people receiving healthcare in long-term care contexts (e.g., home healthcare, sheltered housing and nursing home contexts) are especially vulnerable to developing frailty and functional decline. Considering the negative effects associated with these conditions and the possibility of preventing them from progressing, it is vital that nurses possess a broad knowledge base related to them. Particularly as prevention related to these conditions lies well within their remit. Such knowledge could guide the development of effective models of care, ensuring continuity and, hence, quality of care. Our objective will be to review published literature on existing models of care targeting frailty and/or functional decline and how these conditions are described by older people themselves, significant others, and nurses in relation to long-term care.

Methods and analysis: The scoping review will be conducted in accordance with Arksey and O'Malley's methodological framework. Recent methodological developments will be considered. PubMed, CINAHL and PsycINFO will be searched. Eligibility criteria will be peer-reviewed papers and written in English. All types of study designs will be eligible and included papers will be quality- and ethically assessed. The PRISMA-P checklist for protocols and the PRISMA-ScR checklist were followed in this paper.

Ethics and dissemination: The findings will be published in an open-access, peer-reviewed journal. Additionally, the findings will guide a research project following the Medical Research Council's framework for developing and evaluating complex interventions. Thus, supporting us in developing a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

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Strengths and limitations of this study:

- Designing and reporting the protocol and upcoming scoping review in accordance with the PRISMA checklists will ensure the transparency, reliability and rigour of the review.
- The support of an information specialist in developing a comprehensive search strategy will ensure a higher probability of identifying eligible papers.
- Using a review team of five individuals will ensure independent assessment by two reviewers in all stages, as well as the opportunity to consult with a third person if necessary.
- Adopting a joint strategy of quality assessment and comprehensive overview may contribute to both identifying the gaps in the literature, as well as increasing the uptake and relevance of the results for practice and policy makers.
- Not including stakeholders in the conception and designing of this review might be a limitation.

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INTRODUCTION

Considering the potential adverse health outcomes of frailty and functional decline,[1, 2] as well as the potential reversibility of these conditions,[3] there is an undeniable need for effective models of care for the early detection and prevention of frailty and functional decline among older people in long-term care contexts (e.g., home healthcare, sheltered housing and nursing home contexts).[4, 5] Preventing frailty and functional decline as a part of a healthy ageing strategy is a globally important aim and has been promoted by both the European Commission and World Health organisation (WHO).[6, 7] Despite their global attention, both conditions are repeatedly described as closely related, and the terms are often used interchangeably.[8, 9] The nature of their relationship has been debated, even though the consensus appears to be that frailty predicts functional decline and disability.[3, 10] Our upcoming scoping review will depart from the idea of such a relationship.

It is well known that we live longer and, hence, are at an increased risk of multimorbidity, polypharmacy and the presentation of complex symptoms.[11] This indicates that the number of older people with frailty and at risk of functional decline[8, 11, 12] also is likely to substantially increase. The prevalence of frailty tends to vary, which might be because of the use of numerous definitions and screening instruments but also because frailty tends to increase with age.[13] Among community-dwelling older people (60+), the prevalence of frailty has been estimated to be between 2.6% and 60%[14, 15] and for nursing home patients between 19% and 75.6%.[15, 16] Frailty has also been associated with increased healthcare-related costs.[17] The early detection and preventative healthcare measures targeting these two conditions in long-term care contexts seems vital both for the healthcare offered and the quality of care for older patients. Unfortunately, such measures are challenging for several reasons.

First, older people receiving healthcare services in long-term care contexts are a heterogeneous population; they range from being relatively independent and in need of low-intensity care to being dependent on a range of activities of daily living (ADL) and in need of high intensity care.[11] Furthermore, it is fair to assume that through, for example, informal caregivers, these individuals' deteriorations might be compensated for and delayed over a longer period of time, thereby masking their actual care needs. This complex composition within both the population and the individuals themselves – masking actual care needs – increases the risk of adverse health outcomes because of the difficulties to detect the conditions.

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Second, there is a growing number of older people ageing in place—that is, staying in their own homes.[18] This trend is believed to contribute to appropriate care at a lower cost compared with institutionalised care.[19, 20] Furthermore, according to Boland, et al. [21] there is insufficient evidence related to health-related outcomes to recommend either institutionalised care or home healthcare. Emphasising the preference of the older person when considering moving the locations of care should be taken into account. Research implies that most older people value their independence and prefer to remain in a familiar environment where they feel like they belong.[18] Stressing the importance of detecting and preventing conditions such as frailty and/or functional decline early on in this population. This might result in positive implications when it comes to their possibility for healthy ageing[6, 22] and contribute to more older people having the choice of ageing in place.[18, 22, 23] However, it has been documented that long-term care services experience limitations related to the following: time with patients, number of healthcare staff with adequate competence, collaboration with other professions, guidelines and protocols for care, high rates of sick leave, part-time workers and nurse retention.[23-25] This might increase the risk of nursing staff (e.g., registered nurses, registered practical nurses, licensed practical nurses, and nursing assistants/aides)[26]—hereinafter referred to as nurses—being forced to ration care.[27] This may result in patient monitoring being less prioritised and a further rationing of care that might lead to the signs and symptoms related to frailty and/or functional decline going unobserved. This can risk both patient safety and satisfaction.[28]

Third, a prerequisite for detecting and preventing frailty and/or functional decline is a clear definition and understanding of the concepts, both medically and clinically. A number of definitions have been proposed, yet no consensus exists.[9, 29] In the upcoming scoping review, frailty will be understood in accordance with Clegg et al.'s[30] description as *'a state of vulnerability to poor resolution of homoeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime'* (p. 1). A critical point in the degenerative processes is reached where the homeostatic mechanisms are no longer sufficient. This results in vulnerability, that is, a seemingly small incidence (new drug or a 'minor' infection), having a disproportionate effect on the individual's health.[30] This then increases the risk of adverse health outcomes such as falls, hospitalisation, disability and death.[1, 2] Furthermore, the dependency in ADLs in people with frailty may fluctuate substantially. This is often referred to as 'unstable disability',[30] and we postulate that such fluctuating disability could be understood as functional decline.

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For the upcoming review, functional decline will be defined as a new loss of independence in self-care activities or as a deterioration in self-care skills, here as measured on an ADL scale (e.g., bathing, dressing, transferring from bed to chair, using the toilet, etc.) and/or on an instrumental activities of daily living (IADL) scale (e.g., shopping, housekeeping, preparing meals, etc.).[31, 32] Functional decline among older people can also result in compromises beyond ADL for example physical problems such as falls and malnutrition and psychosocial problems such as depression and delirium.[33] According to Hébert [34] functional decline may manifest subacutely or acutely. Subacute functional decline slowly develops over time and is more difficult to detect than acute functional decline, particularly if the patients are not screened for physical or mental capacity changes. Usually, this is caused by chronic disease or a new, undetected disease, but it may also arise because of polypharmacy, cognitive decline or a psychiatric condition. Acute functional decline often manifests in a couple of days to a week and requires emergent medical attention and hospitalisation. It can be caused by an acute incident (e.g., infection, fall or stroke), malfunction in compensatory mechanisms of a chronic condition or a psychological crisis (e.g., death of a significant other or hospital admission).

Among healthcare professionals, nurses are the largest professional group. They are often the first point of contact, and they are also the group that spends the most time with the patients. Thus, the management of care, including detecting and preventing the signs and symptoms of frailty and/or functional decline, lies both within their remit and range of responsibilities. Despite this, we have not been able to identify any published reviews summarising the evidence within this field. Instead, recent reviews have focused on areas such as the effect of interventions[35-38] and screening tools.[39-41] Furthermore, we might argue that to develop effective models of care related to these conditions, it is critical to understand how frailty and functional decline might be described beyond our medical understanding and by important stakeholders.

Additionally, nurses are expected to provide a diverse range of healthcare services, and one of their functions is to assess, diagnose, intervene and evaluate a patient's personal health needs.[42, 43] Consequently, nursing staff can play a major role in delivering a safe and evidence-based practice that involves detecting and establishing appropriate care actions for older people, regardless of their conditions. Working in accordance with structured and logical (effective) models of care to detect, prevent or postpone frailty and/or functional decline among

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older people in long-term care is vital. Hence, our objective will be to review the literature on existing models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting frailty and/or functional decline, as well as how these two conditions are described by key stakeholders (e.g., older people themselves, their significant others, and nurses) in relation to long-term care.

METHOD AND ANALYSIS

The upcoming scoping review will be conducted in accordance with Arksey and O'Malley's [44] methodological frameworks for conducting scoping studies stage 1-5. Thus, leaving out the optional stage regarding consultation with stakeholders and experts. Additionally, methodological developments will be considered, that is, Levac, et al. [45] and Daudt, et al. [46] As the topic of interest for the upcoming study is broad and complex in nature, in addition to the lack of previously comprehensive reviews, a scoping review design is deemed appropriate.[44] This design allows for inclusion of a diverse range of study designs and papers of differing levels of quality. Furthermore, the iterative methodological process offers us the opportunity to revise our research questions (i.e., remove, amend, or add questions) as we gain more familiarity with the research area.[44] During the search processes the final inclusion and exclusion criteria will be decided upon. This might mean excluding certain conditions or specific forms of care (e.g., palliative care or stroke), change of population and specification of the context. This flexibility is important when reviewing a topic as broad, uncharted, and complex as ours. The iterative approach allows us to start out with broad research questions. This is favourable as we aim to summarise the research findings in our research area as well as to create an overview of both gaps in the literature and of areas which have been thoroughly researched.[44] The included papers will undergo ethical and critical appraisal,[45, 47, 48] relevant data will be extracted,[45, 49] and data answering the review questions will be analysed by content analysis.[50]

This protocol will utilise the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist,[51] as well as the PRISMA-P checklist for reporting protocols (Supplementary file 1-2),[52] which is recommended for scoping reviews and systematic reviews.[53] As recommended, the upcoming review is registered in the Open Science Framework (OSF) (registration number 10.17605/OSF.IO/FNHSA. Registered and last updated on 30 June 2021).

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Stage 1: Identifying the research question

In accordance with Arksey and O'Malley [44] tentative and broad research questions were formulated following the PICoS (Population, Phenomenon of Interest, Context and Study design) framework (Table 1). In accordance with the iterative approach of a scoping review, the tentative research questions may be reformulated as we gain familiarity with the research area.[44]

- What models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting the detection and prevention of frailty and subsequently functional decline among older people are described in relation to long-term care?
- How is the condition of frailty described by key stakeholders in long-term care?
- How is the condition of functional declined described by key stakeholders in long-term care?

Furthermore, subquestions will encompass the following: By whom are the questions in the literature answered, in what specific contexts, in relation to whom or what? Which research designs have been utilised? How is the methodological quality appraised?

Table 1. PICoS framework for determination of eligibility of review questions

Criteria	Determinants
Population	Older people (65+ years) Significant others Nurses[26]
Phenomenon of Interest	Descriptions of models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting the detection and prevention of frailty and/or functional decline among older people Descriptions of frailty and/or functional decline among older people
Context	Long-term care, e.g., home healthcare, sheltered housing and nursing homes[4, 5]
Study design	All study designs

Stage 2: Identifying relevant studies

Systematic searches will be conducted in PubMed, CINAHL and PsycINFO. These databases cover the majority of the published, peer-reviewed health service research. The search strategies will be constructed following the PICoS categories and will be tailored to each database. To

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achieve a comprehensive search strategy with sensitivity and specificity, we will include both controlled subject headings such as MeSH,[54] as well as keywords and synonyms. No time limitation will be implemented because of the lack of earlier reviews and the aim to comprehensively map the area of interest.[44] A preliminary search strategy was constructed for PubMed in collaboration with an information specialist at Karlstad University (Supplementary File 3, last updated on 19 January 2022). Additionally, the reference lists of all the included papers will be searched.[44, 54, 55] To ensure transparency in the iterative process, the first author will keep a logbook throughout the entire project to track amendments from this protocol and other decisions made, including the rationale.[55, 56] Considering what types of research will most likely be relevant for answering our research questions, as well as the time and resources needed searching for grey literature,[55] we have decided to include only published, peer-reviewed research.

Stage 3: Study selection

To ensure consistency, reliability and validity in the selection process, eligibility criteria will be constructed.[45] A tentative summary of the eligibility criteria is described below. Still, in accordance with the iterative process, the eligibility criteria might be refined as familiarity with the field increases and can then be applied to all citations post hoc.[44]

Using the eligibility criteria, two independent reviewers will assess the relevance of all titles and abstracts in the search results. The full text of the relevant papers, as well as those where relevance is unclear, will be assessed for inclusion[44] by two reviewers.[45, 46] Meetings will be held regularly to address any uncertainties.[45] Disagreements will be resolved through discussion and, if necessary, consultation with a third reviewer. The selection process will be documented using the PRISMA flowchart[57] (Figure 1). The data programme Rayyan will be utilised using the option ‘blind on’ to ensure an independent review.[58]

Insert --- Figure 1. about here ---

The eligibility criteria relate to the categories in PICoS, as well as the research type, language and ethical considerations. The population will be limited to older people, their significant others, and nurses. Older people will be defined as all people over the age of 65 years, considering that this is a standard cut-off for older people in most research and databases today. Significant others are tentatively defined as individuals with a close relationship to the older

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person, not defined by kinship or by being an unpaid carer. As previously stated, nurses will be defined as nursing staff (e.g., registered nurses, registered practical nurses, licensed practical nurses, and nursing assistants/aides).[26] Because there exists no consensus definition of frailty or functional decline, we will use the definitions presented in the introduction of this protocol as the inclusion criteria. The context will be defined as long-term care contexts, for example, home healthcare, sheltered housing and nursing homes.[4, 5] All study designs will be included. Because the aim of the review is to summarise evidence from published, peer-reviewed research, we will exclude research types not complying with these parameters, such as letters to the editor and discussion papers. Considering time and resources, we will only include papers that do not need translation, that is, those in English. There is a rising appreciation of the contribution that ethical quality assessment in reviews may have on sustainable and ethical research.[47, 48] To contribute to this work, we have constructed a tentative list of the ethical requirements for the included papers, as influenced by Weingarten, et al. [47] (Table 2). Depending on the total number of eligible papers and the overall methodological and ethical quality, a decision regarding excluding papers of subpar standards will be made.

Table 2. Ethical requirements

Was the study approved by an ethical research committee?	Yes/No
Was informed consent retrieved from all participants?	Yes/No
Were the personal data/transcriptions/recordings properly managed, stored and disposed off?	Yes/No
Was the relevance of the study clearly justified?	Yes/No
Was any conflict of interests or funding declared?	Yes/No

Stage 4: Charting the data

A data charting form will be iteratively developed to facilitate the systematic charting of data. Tentative data charting items are shown in Box 1, which will be iteratively developed throughout the review process. Two reviewers will develop and independently test the form on the first five to ten relevant papers.[45, 49] Thereafter, two independent reviewers will apply the form to all included papers. Disagreements will be resolved by discussion with a third review team member.

Box. 1 Tentative data charting items

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Full reference (including authors, year of publication, journal, etc.)
Title
Aim, objective and/or research question
Population and participant characteristics (e.g., total number of participants and number per subgroup, i.e., older people, significant others, and nurses. Age range for the older people and type of significant other, as for example spouse, child, or neighbour. As well as type of nurse, such as registered nurse or nursing assistant)
Phenomenon of Interest (e.g., frailty, functional decline, both conditions, models of care, practice guidelines)
Study context and country
Sampling method
Study design (e.g., type of qualitative, quantitative, or mixed/multiple methods)
Data collection method (e.g., individual interviews, focus groups or survey)
Data analysis (e.g., type of thematic analysis, content analysis, descriptive numerical analysis)
Relevant findings (e.g., themes, categories, numerical data, and outcomes, types of models of care, possible theoretical underpinnings)
Quality assessment (the Critical Appraisal Skills Programme checklists[59] or the mixed methods appraisal tool[60])
Ethical assessment (see Table 2[47] [48])

Quality appraisal in scoping reviews is a topic of debate, with researchers both for[45, 46, 61] and against it.[44, 49] Despite this all the included papers will be quality assessed but included regardless of the results. No weighting of the evidence will be done;[44] rather, a quality assessment will be utilised to identify potential gaps in the literature related to high-quality research.[45] The quality assessment will be conducted by two independent reviewers using the checklists from the Critical Appraisal Skills Programme (CASP).[59] For mixed method studies, the mixed method appraisal tool will be applied.[60]

Stage 5: Collating, summarising and reporting the results

The charted data including the relevant findings from each included paper will be presented in both a schematical overview and as a narrative account. Numerical analysis of the quantitative data will be descriptive and focus on the nature, extent and distribution of the data. How the results are presented will depend on the findings (e.g., tables, chart, figures).[49] The qualitative data will most likely be analysed using qualitative content analysis,[50] as recommended by

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Levac, et al. [45] Still, considering the iterative methodologically approach we might decide to change the method for qualitative analysis as we gain familiarity with the evidence. Irrespective of which method of analysis is chosen the focus will be on the manifest content. Using a descriptive approach and focusing on manifest content entails a very low degree of interpretation.[62] This is in accordance with the aim of summarising—not synthesising—evidence in a scoping review.[44] Additionally, the PAGER (Patterns, Advances, Gaps, Evidence for practice and Research recommendations) reporting guidelines framework for scoping reviews will be used to secure the quality of our reporting.[63] Two reviewers will be responsible for this stage, and regular meetings will be conducted with the whole review team where decisions related to analysis and presentation of findings will be discussed and decided upon.

Patient and public involvement

No patients were involved in the conception or design of the upcoming review.

ETHICS AND DISSEMINATION

Despite reviews being excluded from ethical assessment by ethical review authorities,[64-66] the need for ethical considerations when conducting reviews has been highlighted by Vergnes, et al. [48] and Weingarten, et al. [47] Vergnes, et al. [48] offers the following arguments pro ethical assessment, i) raising awareness of the importance of upholding the high ethical standard in research with humans, ii) not basing practice on trials not following ethical principles, iii) respecting the conflict of interest statement as well as the financial disclosure, iv) discouraging publication of non-ethical research under the cover of "systematic review", v) respecting confidentiality and informed consent. Additionally, as there is no consensus on how to assess ethical issues in reviews Weingarten, et al. [47] have proposed the use of standardised protocols for assessing ethical aspects (e.g., Table 2). We will contribute to this by considering the ethical standards of all eligible papers.

Furthermore, to ensure an effective literature review, as well as avoid research waste,[67] we have conducted a thorough exploratory search to assess the need for the upcoming review. The ethical importance of writing this protocol should also be mentioned because protocols alongside the precise logging of amendments in the final review manuscript are an important part of making our review transparent to criticism.

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The scoping review will be published in a peer-reviewed, open-access journal. Tentatively, the findings will be reported by winter 2022. Additionally, the findings will be utilised in a research project following the Medical Research Council's framework for developing and evaluating complex interventions[68] to inform the development of a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

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AUTHORS' CONTRIBUTIONS

IRF, GB, ERG, AJ-E and EL-O were responsible for the study's inception and design. IRF was responsible for drafting the first version of the manuscript. GB, ERG, AJ-E and EL-O were responsible for the critical revision of the paper and for adding important intellectual content. GB supervised the study. All authors read and approved the final manuscript.

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COMPETING INTERESTS STATEMENT

The authors of this scoping review protocol declare no competing interests in connection with this manuscript.

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Figure 1. PRISMA-flowchart: Overview of the study selection process

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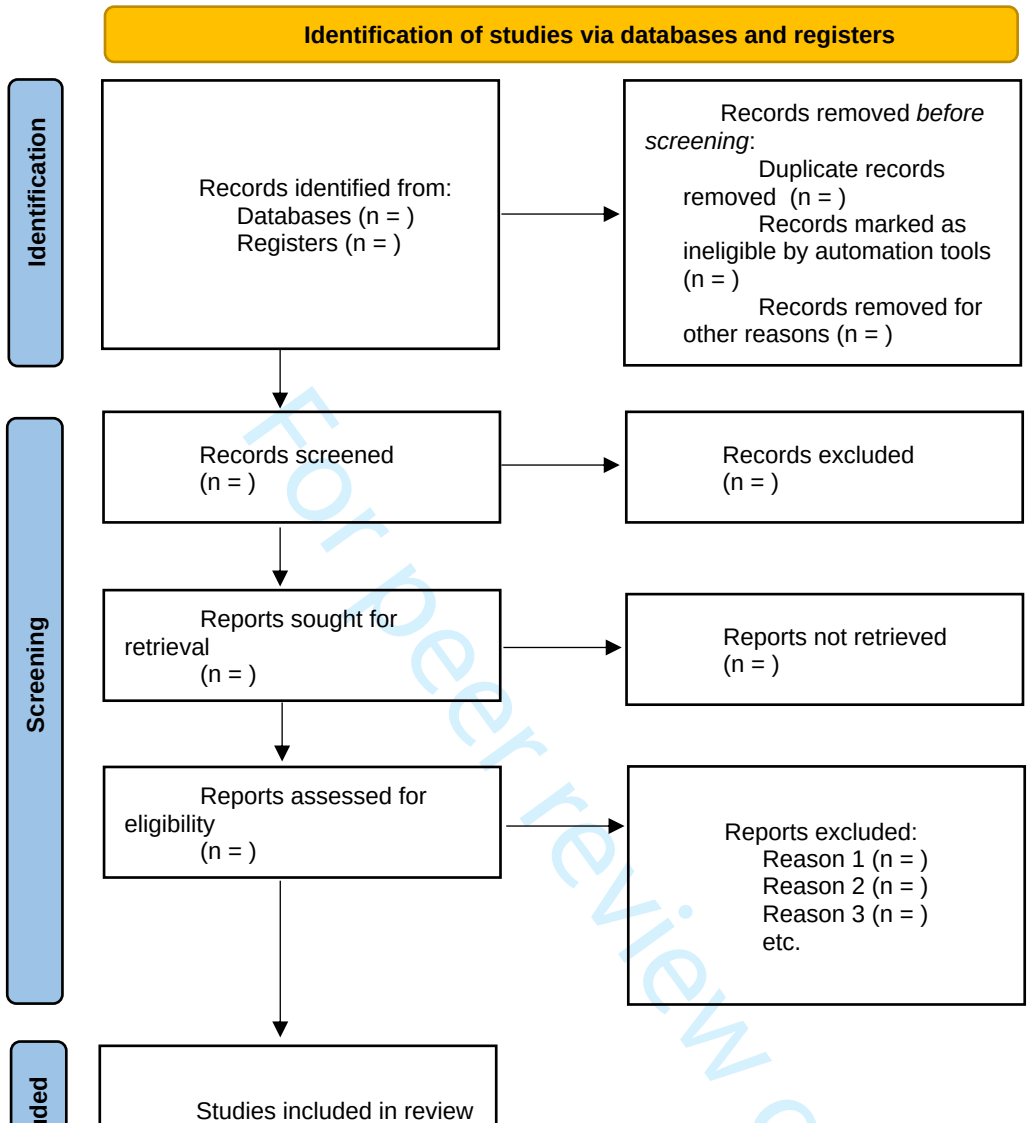
Figure 1. PRISMA-flowchart: Overview of the study selection process



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SUPPLEMENTARY FILE 1

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Title page
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3-6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	5-6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	6

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	7
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplementary File 3
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	8
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	9
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Box 1

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	9
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Not applicable for the protocol
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Not applicable for the protocol
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable for the protocol
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Not applicable for the protocol
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Not applicable for the protocol
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of	Not applicable for the protocol

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	Not applicable for the protocol
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Not applicable for the protocol
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850

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SUPPLEMENTARY FILE 2

PRISMA-P 2015 Checklist

This checklist was retrieved by the authors of this protocol from the PRISMA web page, and is an adapted version of Table 3 in Moher, et al. [52]: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement.

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	Title page
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	1 and 6
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	11
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☒	☐	7
Support					
Sources	5a	Indicate sources of financial or other support for the review	☐	☒	11

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
					No funders/ sponsors
Sponsor	5b	Provide name for the review funder and/or sponsor	☐	☒	Not applicable
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☐	☒	Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	3-6
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	6
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	8
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	7
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	Supplementary File 3
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	8
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	8

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	9
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	Box 1
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	Box 1
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	9
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☐	☒	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	10
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☐	☒	

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SUPPLEMENTARY FILE 3

Tentative search strategy: PubMed

Last updated on: 19.01.22

Question 2: How is the concept of frailty described and understood by older people, their significant others, and nurses in long-term care contexts?

PubMed	**Search block: Older people (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#1	Aged	"aged"[MeSH Terms] OR "aged"[All Fields]	5,765,926
#2	Elderly	"aged"[MeSH Terms] OR "aged"[All Fields] OR "elderly"[All Fields] OR "elderlies"[All Fields] OR "elderly s"[All Fields] OR "elderlys"[All Fields]	5,823,455
#3	Older	"older"[All Fields] OR "olders"[All Fields]	496,898
#4	Combination:	**#1 OR #2 OR #3**	5,978,243

PubMed	**Search block: Significant others (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#5	Significant others	"significant"[All Fields] AND "other*"[All Fields]	763,016
#6	Informal caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("informal"[All Fields] AND "caregiver*"[All Fields])	92,958
#7	Family	"family"[MeSH Terms] OR "family"[All Fields] OR "families"[All Fields] OR "family s"[All Fields] OR "familys"[All Fields]	1,542,673
#8	Relatives	"relative"[All Fields] OR "relatives"[All Fields] OR "relative s"[All Fields]	984,365
#9	Family caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("family"[All Fields] AND "caregiver*"[All Fields])	92,958
#10	Spouses	"spouse s"[All Fields] OR "spouses"[MeSH Terms] OR "spouses"[All Fields] OR "spouse"[All Fields]	34,339
#11	Husbands	"husband s"[All Fields] OR "husband"[All Fields] OR "husbands"[All Fields]	14,379
#12	Wives	"wife"[All Fields] OR "wives"[All Fields] OR "wife s"[All Fields]	11,491
#13	Next-of-kin	"Next-of-kin"[All Fields]	1,920
#14	Combination:	**#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13**	3,174,444

PubMed	**Search block: Nursing staff (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#15	Nurse	"nurse s"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR "nurse"[All Fields] OR "nurses s"[All Fields]	408,405

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#16	Nursing personnel	"nursing staff"[MeSH Terms] OR ("nursing"[All Fields] AND "staff"[All Fields]) OR "nursing staff"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields]) OR "nursing personnel"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields])	365,108
#17	Healthcare assistants	"allied health personnel"[MeSH Terms] OR ("allied"[All Fields] AND "health"[All Fields] AND "personnel"[All Fields]) OR "allied health personnel"[All Fields] OR ("healthcare"[All Fields] AND "assistants"[All Fields]) OR "healthcare assistants"[All Fields]	56,879
#18	Healthcare aides	("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields]) AND "aides"[All Fields]	1,248
#19	Nursing assistants	"nursing assistants"[MeSH Terms] OR ("nursing"[All Fields] AND "assistants"[All Fields]) OR "nursing assistants"[All Fields]	8,416
#20	Nursing aides	("nursing"[MeSH Terms] OR "nursing"[All Fields] OR "nursings"[All Fields]) AND "aides"[All Fields]	1,843
#21	Formal caregivers	("formal"[All Fields] OR "formalized"[All Fields]) AND ("caregivers"[All Fields] OR "caregivers"[MeSH Terms] OR "caregivers"[All Fields] OR "caregiver"[All Fields] OR "caregiving"[All Fields])	2,921
#22	Combination:	**#15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21**	526,064

PubMed	**Search block: Frailty (I)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#23	Frail	"frail"[All Fields] OR "frails"[All Fields] OR "frailty"[MeSH Terms] OR "frailty"[All Fields] OR "frailness"[All Fields]	34,147

PubMed	**Search block: Long-term care (C)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#24	Long-term care	"long term care"[MeSH Terms] OR ("long term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields] OR ("long"[All Fields] AND "term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields]	158,645
#25	Primary care	"primary health care"[MeSH Terms] OR ("primary"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "primary health care"[All Fields] OR ("primary"[All Fields] AND "care"[All Fields]) OR "primary care"[All Fields]	519,348
#26	Community healthcare	"community health services"[MeSH Terms] OR ("community"[All Fields] AND "health"[All Fields] AND "services"[All Fields]) OR "community health services"[All Fields] OR ("community"[All Fields] AND "healthcare"[All Fields]) OR "community healthcare"[All Fields]	453,397
#27	Community dwelling	"independent living"[MeSH Terms] OR ("independent"[All Fields] AND "living"[All Fields]) OR "independent living"[All Fields] OR ("community"[All Fields] AND "dwelling"[All Fields]) OR "community dwelling"[All Fields]	55,793
#28	Community nursing	("community"[All Fields] AND "nursing"[All Fields]) OR "community nursing"[All Fields]	85,995
#29	Home healthcare	("home environment"[MeSH Terms] OR ("home"[All Fields] AND "environment"[All Fields]) OR "home environment"[All Fields] OR "home"[All Fields]) AND ("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields])	68,971
#30	Home nursing	"home nursing"[MeSH Terms] OR ("home"[All Fields] AND "nursing"[All Fields]) OR "home nursing"[All Fields]	72,058

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#31	Nursing home	"nursing homes"[MeSH Terms] OR ("nursing"[All Fields] AND "homes"[All Fields]) OR "nursing homes"[All Fields] OR ("nursing"[All Fields] AND "home"[All Fields]) OR "nursing home"[All Fields]	99,292
#32	Combination:	**#24 OR #25 OR #26 OR #27 OR #28 OR #29 OR 30 OR #31**	1,155,165

PubMed	**Combination of blocks**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#33	Combination (P):	**#4 OR #14 OR #22**	8,752,419
#34	Combination (PIC):	**#23 AND #32 AND #33**	11,877

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Nursing, Frailty, Functional Decline and Models of Care in Relation to Older People Receiving Long-term Care: A Scoping Review Protocol

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Nursing, Frailty, Functional Decline and Models of Care in Relation to Older People Receiving Long-term Care: A Scoping Review Protocol

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ABSTRACT

Introduction: Older people receiving healthcare in long-term care contexts (e.g., home healthcare, sheltered housing and nursing home contexts) are especially vulnerable to developing frailty and functional decline. Considering the negative effects associated with these conditions and the possibility of preventing them from progressing, it is vital that nurses possess a broad knowledge base related to them. Particularly as prevention related to these conditions lies well within their remit. Such knowledge could guide the development of effective models of care, ensuring continuity and, hence, quality of care. Our objective will be to review published literature on existing models of care targeting frailty and/or functional decline and how these conditions are described by older people themselves, significant others, and nurses in relation to long-term care.

Methods and analysis: The scoping review will be conducted in accordance with Arksey and O'Malley's methodological framework. Recent methodological developments will be considered. PubMed, CINAHL and PsycINFO will be searched. Eligibility criteria will be peer-reviewed papers and written in English. All types of study designs will be eligible and included papers will be quality- and ethically assessed. The PRISMA-P checklist for protocols and the PRISMA-ScR checklist were followed in this paper.

Ethics and dissemination: As the study outlined in this protocol is a scoping review no ethics approval was needed for this protocol nor for the upcoming study. The findings will be published in an open-access, peer-reviewed journal. Additionally, the findings will guide a research project following the Medical Research Council's framework for developing and evaluating complex interventions. Thus, supporting us in developing a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

Registration details: Open Science Framework, 10.17605/OSF.IO/FNHSA.

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Strengths and limitations of this study:

- Designing and reporting the protocol and upcoming scoping review in accordance with the PRISMA checklists will ensure the transparency, reliability and rigour of the review.
- The support of an information specialist in developing a comprehensive search strategy will ensure a higher probability of identifying eligible papers.
- Using a review team of five individuals will ensure independent assessment by two reviewers in all stages, as well as the opportunity to consult with a third person if necessary.
- Adopting a joint strategy of quality assessment and comprehensive overview may contribute to both identifying the gaps in the literature, as well as increasing the uptake and relevance of the results for practice and policy makers.
- Not including stakeholders in the conception and designing of this review might be a limitation.

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INTRODUCTION

Considering the potential adverse health outcomes of frailty and functional decline,[1, 2] as well as the potential reversibility of these conditions,[3] there is an undeniable need for effective models of care for the early detection and prevention of frailty and functional decline among older people in long-term care contexts (e.g., home healthcare, sheltered housing and nursing home contexts).[4, 5] Preventing frailty and functional decline as a part of a healthy ageing strategy is a globally important aim and has been promoted by both the European Commission and World Health organisation (WHO).[6, 7] Despite their global attention, both conditions are repeatedly described as closely related, and the terms are often used interchangeably.[8, 9] The nature of their relationship has been debated, even though the consensus appears to be that frailty predicts functional decline and disability.[3, 10] Our upcoming scoping review will depart from the idea of such a relationship.

It is well known that we live longer and, hence, are at an increased risk of multimorbidity, polypharmacy and the presentation of complex symptoms.[11] This indicates that the number of older people with frailty and at risk of functional decline[8, 11, 12] also is likely to substantially increase. The prevalence of frailty tends to vary, which might be because of the use of numerous definitions and screening instruments but also because frailty tends to increase with age.[13] Among community-dwelling older people (60+), the prevalence of frailty has been estimated to be between 2.6% and 60%[14, 15] and for nursing home patients between 19% and 75.6%.[15, 16] Frailty has also been associated with increased healthcare-related costs.[17] The early detection and preventative healthcare measures targeting these two conditions in long-term care contexts seems vital both for the healthcare offered and the quality of care for older patients. Unfortunately, such measures are challenging for several reasons.

First, older people receiving healthcare services in long-term care contexts are a heterogeneous population; they range from being relatively independent and in need of low-intensity care to being dependent on a range of activities of daily living (ADL) and in need of high intensity care.[11] Furthermore, it is fair to assume that through, for example, informal caregivers, these individuals' deteriorations might be compensated for and delayed over a longer period of time, thereby masking their actual care needs. This complex composition within both the population and the individuals themselves – masking actual care needs – increases the risk of adverse health outcomes because of the difficulties to detect the conditions.

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Second, there is a growing number of older people ageing in place—that is, staying in their own homes.[18] This trend is believed to contribute to appropriate care at a lower cost compared with institutionalised care.[19, 20] Furthermore, according to Boland, et al. [21] there is insufficient evidence related to health-related outcomes to recommend either institutionalised care or home healthcare. Emphasising the preference of the older person when considering moving the locations of care should be taken into account. Research implies that most older people value their independence and prefer to remain in a familiar environment where they feel like they belong.[18] Stressing the importance of detecting and preventing conditions such as frailty and/or functional decline early on in this population. This might result in positive implications when it comes to their possibility for healthy ageing[6, 22] and contribute to more older people having the choice of ageing in place.[18, 22, 23] However, it has been documented that long-term care services experience limitations related to the following: time with patients, number of healthcare staff with adequate competence, collaboration with other professions, guidelines and protocols for care, high rates of sick leave, part-time workers and nurse retention.[23-25] This might increase the risk of nursing staff (e.g., registered nurses, registered practical nurses, licensed practical nurses, and nursing assistants/aides)[26]—hereinafter referred to as nurses—being forced to ration care.[27] This may result in patient monitoring being less prioritised and a further rationing of care that might lead to the signs and symptoms related to frailty and/or functional decline going unobserved. This can risk both patient safety and satisfaction.[28]

Third, a prerequisite for detecting and preventing frailty and/or functional decline is a clear definition and understanding of the concepts, both medically and clinically. A number of definitions have been proposed, yet no consensus exists.[9, 29] In the upcoming scoping review, frailty will be understood in accordance with Clegg et al.'s[30] description as *'a state of vulnerability to poor resolution of homoeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime'* (p. 1). A critical point in the degenerative processes is reached where the homeostatic mechanisms are no longer sufficient. This results in vulnerability, that is, a seemingly small incidence (new drug or a 'minor' infection), having a disproportionate effect on the individual's health.[30] This then increases the risk of adverse health outcomes such as falls, hospitalisation, disability and death.[1, 2] Furthermore, the dependency in ADLs in people with frailty may fluctuate substantially. This is often referred to as 'unstable disability',[30] and we postulate that such fluctuating disability could be understood as functional decline.

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For the upcoming review, functional decline will be defined as a new loss of independence in self-care activities or as a deterioration in self-care skills, here as measured on an ADL scale (e.g., bathing, dressing, transferring from bed to chair, using the toilet, etc.) and/or on an instrumental activities of daily living (IADL) scale (e.g., shopping, housekeeping, preparing meals, etc.).[31, 32] Functional decline among older people can also result in compromises beyond ADL for example physical problems such as falls and malnutrition and psychosocial problems such as depression and delirium.[33] According to Hébert [34] functional decline may manifest subacutely or acutely. Subacute functional decline slowly develops over time and is more difficult to detect than acute functional decline, particularly if the patients are not screened for physical or mental capacity changes. Usually, this is caused by chronic disease or a new, undetected disease, but it may also arise because of polypharmacy, cognitive decline or a psychiatric condition. Acute functional decline often manifests in a couple of days to a week and requires emergent medical attention and hospitalisation. It can be caused by an acute incident (e.g., infection, fall or stroke), malfunction in compensatory mechanisms of a chronic condition or a psychological crisis (e.g., death of a significant other or hospital admission).

Among healthcare professionals, nurses are the largest professional group. They are often the first point of contact, and they are also the group that spends the most time with the patients. Thus, the management of care, including detecting and preventing the signs and symptoms of frailty and/or functional decline, lies both within their remit and range of responsibilities. Despite this, we have not been able to identify any published reviews summarising the evidence within this field. Instead, recent reviews have focused on areas such as the effect of interventions[35-38] and screening tools.[39-41] Furthermore, we might argue that to develop effective models of care related to these conditions, it is critical to understand how frailty and functional decline might be described beyond our medical understanding and by important stakeholders.

Additionally, nurses are expected to provide a diverse range of healthcare services, and one of their functions is to assess, diagnose, intervene and evaluate a patient's personal health needs.[42, 43] Consequently, nursing staff can play a major role in delivering a safe and evidence-based practice that involves detecting and establishing appropriate care actions for older people, regardless of their conditions. Working in accordance with structured and logical (effective) models of care to detect, prevent or postpone frailty and/or functional decline among

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older people in long-term care is vital. Hence, our objective will be to review the literature on existing models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting frailty and/or functional decline, as well as how these two conditions are described by key stakeholders (e.g., older people themselves, their significant others, and nurses) in relation to long-term care.

METHOD AND ANALYSIS

The upcoming scoping review will be conducted in accordance with Arksey and O'Malley's [44] methodological frameworks for conducting scoping studies stage 1-5. Thus, leaving out the optional stage regarding consultation with stakeholders and experts. Additionally, methodological developments will be considered, that is, Levac, et al. [45] and Daudt, et al. [46] As the topic of interest for the upcoming study is broad and complex in nature, in addition to the lack of previously comprehensive reviews, a scoping review design is deemed appropriate.[44] This design allows for inclusion of a diverse range of study designs and papers of differing levels of quality. Furthermore, the iterative methodological process offers us the opportunity to revise our research questions (i.e., remove, amend, or add questions) as we gain more familiarity with the research area.[44] During the search processes the final inclusion and exclusion criteria will be decided upon. This might mean excluding certain conditions or specific forms of care (e.g., palliative care or stroke), change of population and specification of the context. This flexibility is important when reviewing a topic as broad, uncharted, and complex as ours. The iterative approach allows us to start out with broad research questions. This is favourable as we aim to summarise the research findings in our research area as well as to create an overview of both gaps in the literature and of areas which have been thoroughly researched.[44] The included papers will undergo ethical and critical appraisal,[45, 47, 48] relevant data will be extracted,[45, 49] and data answering the review questions will be analysed by content analysis.[50]

This protocol will utilise the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist,[51] as well as the PRISMA-P checklist for reporting protocols (Supplementary file 1-2),[52] which is recommended for scoping reviews and systematic reviews.[53] As recommended, the upcoming review is registered in the Open Science Framework (OSF) (registration number 10.17605/OSF.IO/FNHSA. Registered and last updated on 30 June 2021). Following this registration, the preparations for the review started with the writing and submission of this

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protocol, including preliminary searches. Submitted in January 2022. The database searches were finalised and run in late June 2022. All searches were thereafter downloaded to Rayyan and the inclusion- and exclusion process of eligible papers will start mid-August. The tentative end time for the scoping review will be December 2022 – January 2023.

Stage 1: Identifying the research question

In accordance with Arksey and O'Malley [44] tentative and broad research questions were formulated following the PICoS (Population, Phenomenon of Interest, Context and Study design) framework (Table 1). In accordance with the iterative approach of a scoping review, the tentative research questions may be reformulated as we gain familiarity with the research area.[44]

- What models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting the detection and prevention of frailty and subsequently functional decline among older people are described in relation to long-term care?
- How is the condition of frailty described by key stakeholders in long-term care?
- How is the condition of functional declined described by key stakeholders in long-term care?

Furthermore, subquestions will encompass the following: By whom are the questions in the literature answered, in what specific contexts, in relation to whom or what? Which research designs have been utilised? How is the methodological quality appraised?

Table 1. PICoS framework for determination of eligibility of review questions

Criteria	Determinants
Population	Older people (65+ years) Significant others Nurses[26]
Phenomenon of Interest	Descriptions of models of care, frameworks, patient care pathways and/or clinical practice guidelines targeting the detection and prevention of frailty and/or functional decline among older people Descriptions of frailty and/or functional decline among older people
Context	Long-term care, e.g., home healthcare, sheltered housing and nursing homes[4, 5]
Study design	All study designs

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Stage 2: Identifying relevant studies

Systematic searches will be conducted in PubMed, CINAHL and PsycINFO. These databases cover the majority of the published, peer-reviewed health service research. The search strategies will be constructed following the PICoS categories and will be tailored to each database. To achieve a comprehensive search strategy with sensitivity and specificity, we will include both controlled subject headings such as MeSH,[54] as well as keywords and synonyms. No time limitation will be implemented because of the lack of earlier reviews and the aim to comprehensively map the area of interest.[44] A preliminary search strategy was constructed for PubMed in collaboration with an information specialist at Karlstad University (Supplementary File 3, last updated on 19 January 2022). Additionally, the reference lists of all the included papers will be searched.[44, 54, 55] To ensure transparency in the iterative process, the first author will keep a logbook throughout the entire project to track amendments from this protocol and other decisions made, including the rationale.[55, 56] Considering what types of research will most likely be relevant for answering our research questions, as well as the time and resources needed searching for grey literature,[55] we have decided to include only published, peer-reviewed research.

Stage 3: Study selection

To ensure consistency, reliability and validity in the selection process, eligibility criteria will be constructed.[45] A tentative summary of the eligibility criteria is described below. Still, in accordance with the iterative process, the eligibility criteria might be refined as familiarity with the field increases and can then be applied to all citations post hoc.[44]

Using the eligibility criteria, two independent reviewers will assess the relevance of all titles and abstracts in the search results. The full text of the relevant papers, as well as those where relevance is unclear, will be assessed for inclusion[44] by two reviewers.[45, 46] Meetings will be held regularly to address any uncertainties.[45] Disagreements will be resolved through discussion and, if necessary, consultation with a third reviewer. The selection process will be documented using the PRISMA flowchart[57] (Figure 1). The data programme Rayyan will be utilised using the option ‘blind on’ to ensure an independent review.[58]

Insert --- Figure 1. about here ---

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The eligibility criteria relate to the categories in PICoS, as well as the research type, language and ethical considerations. The population will be limited to older people, their significant others, and nurses. Older people will be defined as all people over the age of 65 years, considering that this is a standard cut-off for older people in most research and databases today. Significant others are tentatively defined as individuals with a close relationship to the older person, not defined by kinship or by being an unpaid carer. As previously stated, nurses will be defined as nursing staff (e.g., registered nurses, registered practical nurses, licensed practical nurses, and nursing assistants/aides).[26] Because there exists no consensus definition of frailty or functional decline, we will use the definitions presented in the introduction of this protocol as the inclusion criteria. The context will be defined as long-term care contexts, for example, home healthcare, sheltered housing and nursing homes.[4, 5] All study designs will be included. Because the aim of the review is to summarise evidence from published, peer-reviewed research, we will exclude research types not complying with these parameters, such as letters to the editor and discussion papers. Considering time and resources, we will only include papers that do not need translation, that is, those in English. There is a rising appreciation of the contribution that ethical quality assessment in reviews may have on sustainable and ethical research.[47, 48] To contribute to this work, we have constructed a tentative list of the ethical requirements for the included papers, as influenced by Weingarten, et al. [47] (Table 2). Depending on the total number of eligible papers and the overall methodological and ethical quality, a decision regarding excluding papers of subpar standards will be made.

Table 2. Ethical requirements

Was the study approved by an ethical research committee?	Yes/No
Was informed consent retrieved from all participants?	Yes/No
Were the personal data/transcriptions/recordings properly managed, stored and disposed off?	Yes/No
Was the relevance of the study clearly justified?	Yes/No
Was any conflict of interests or funding declared?	Yes/No

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Stage 4: Charting the data

A data charting form will be iteratively developed to facilitate the systematic charting of data. Tentative data charting items are shown in Box 1, which will be iteratively developed throughout the review process. Two reviewers will develop and independently test the form on the first five to ten relevant papers.[45, 49] Thereafter, two independent reviewers will apply the form to all included papers. Disagreements will be resolved by discussion with a third review team member.

Box. 1 Tentative data charting items

Full reference (including authors, year of publication, journal, etc.)
Title
Aim, objective and/or research question
Population and participant characteristics (e.g., total number of participants and number per subgroup, i.e., older people, significant others, and nurses. Age range for the older people and type of significant other, as for example spouse, child, or neighbour. As well as type of nurse, such as registered nurse or nursing assistant)
Phenomenon of Interest (e.g., frailty, functional decline, both conditions, models of care, practice guidelines)
Study context and country
Sampling method
Study design (e.g., type of qualitative, quantitative, or mixed/multiple methods)
Data collection method (e.g., individual interviews, focus groups or survey)
Data analysis (e.g., type of thematic analysis, content analysis, descriptive numerical analysis)
Relevant findings (e.g., themes, categories, numerical data, and outcomes, types of models of care, possible theoretical underpinnings)
Quality assessment (the Critical Appraisal Skills Programme checklists[59] or the mixed methods appraisal tool[60])
Ethical assessment (see Table 2[47] [48])

Quality appraisal in scoping reviews is a topic of debate, with researchers both for[45, 46, 61] and against it.[44, 49] Despite this all the included papers will be quality assessed but included regardless of the results. No weighting of the evidence will be done;[44] rather, a quality assessment will be utilised to identify potential gaps in the literature related to high-quality research.[45] The quality assessment will be conducted by two independent reviewers using the

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checklists from the Critical Appraisal Skills Programme (CASP).[59] For mixed method studies, the mixed method appraisal tool will be applied.[60]

Stage 5: Collating, summarising and reporting the results

The charted data including the relevant findings from each included paper will be presented in both a schematical overview and as a narrative account. Numerical analysis of the quantitative data will be descriptive and focus on the nature, extent and distribution of the data. How the results are presented will depend on the findings (e.g., tables, chart, figures).[49] The qualitative data will most likely be analysed using qualitative content analysis,[50] as recommended by Levac, et al. [45] Still, considering the iterative methodologically approach we might decide to change the method for qualitative analysis as we gain familiarity with the evidence. Irrespective of which method of analysis is chosen the focus will be on the manifest content. Using a descriptive approach and focusing on manifest content entails a very low degree of interpretation.[62] This is in accordance with the aim of summarising—not synthesising—evidence in a scoping review.[44] Additionally, the PAGER (Patterns, Advances, Gaps, Evidence for practice and Research recommendations) reporting guidelines framework for scoping reviews will be used to secure the quality of our reporting.[63] Two reviewers will be responsible for this stage, and regular meetings will be conducted with the whole review team where decisions related to analysis and presentation of findings will be discussed and decided upon.

Patient and public involvement

No patients were involved in the conception or design of the upcoming review.

ETHICS AND DISSEMINATION

Despite reviews being excluded from ethical assessment by ethical review authorities,[64-66] the need for ethical considerations when conducting reviews has been highlighted by Vergnes, et al. [48] and Weingarten, et al. [47] Vergnes, et al. [48] offers the following arguments pro ethical assessment, i) raising awareness of the importance of upholding the high ethical standard in research with humans, ii) not basing practice on trials not following ethical principles, iii) respecting the conflict of interest statement as well as the financial disclosure, iv) discouraging publication of non-ethical research under the cover of "systematic review", v) respecting confidentiality and informed consent. Additionally, as there is no

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consensus on how to assess ethical issues in reviews Weingarten, et al. [47] have proposed the use of standardised protocols for assessing ethical aspects (e.g., Table 2). We will contribute to this by considering the ethical standards of all eligible papers.

Furthermore, to ensure an effective literature review, as well as avoid research waste,[67] we have conducted a thorough exploratory search to assess the need for the upcoming review. The ethical importance of writing this protocol should also be mentioned because protocols alongside the precise logging of amendments in the final review manuscript are an important part of making our review transparent to criticism.

The scoping review will be published in a peer-reviewed, open-access journal. Tentatively, the findings will be reported by winter 2022. Additionally, the findings will be utilised in a research project following the Medical Research Council's framework for developing and evaluating complex interventions[68] to inform the development of a model of care related to the detection and prevention of frailty and/or functional decline among older people in a long-term care context.

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AUTHORS' CONTRIBUTIONS

IRF, GB, ERG, AJ-E and EL-O were responsible for the study's inception and design. IRF was responsible for drafting the first version of the manuscript. GB, ERG, AJ-E and EL-O were responsible for the critical revision of the paper and for adding important intellectual content. GB supervised the study. All authors read and approved the final manuscript.

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COMPETING INTERESTS STATEMENT

The authors of this scoping review protocol declare no competing interests in connection with this manuscript.

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LICENCE STATEMENT

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Figure 1. PRISMA-flowchart: Overview of the study selection process

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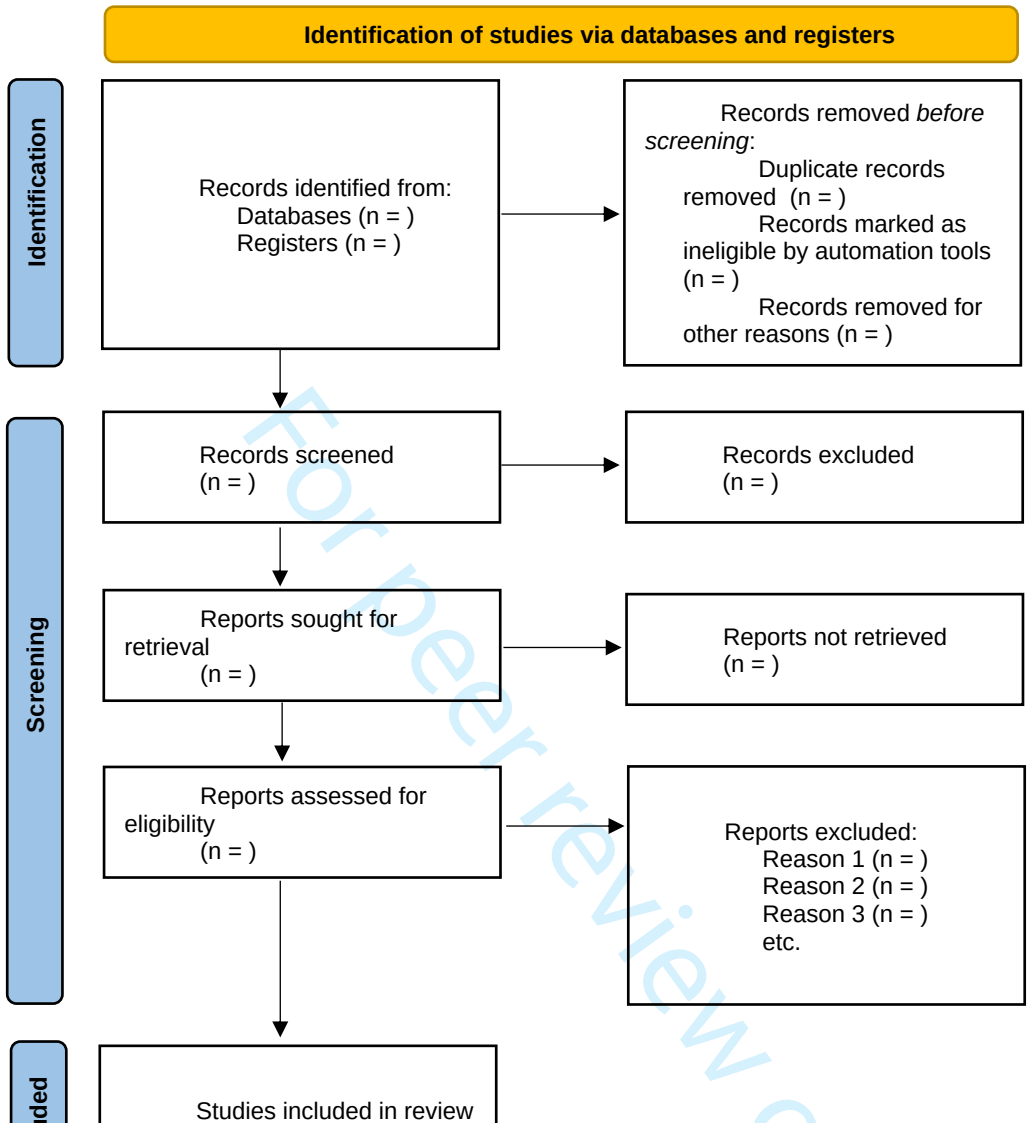
Figure 1. PRISMA-flowchart: Overview of the study selection process



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SUPPLEMENTARY FILE 1

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Title page
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3-6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	5-6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	6

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	7
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplementary File 3
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	8
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	9
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Box 1

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	9
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Not applicable for the protocol
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Not applicable for the protocol
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable for the protocol
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Not applicable for the protocol
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Not applicable for the protocol
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of	Not applicable for the protocol

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	Not applicable for the protocol
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Not applicable for the protocol
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850

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SUPPLEMENTARY FILE 2

PRISMA-P 2015 Checklist

This checklist was retrieved by the authors of this protocol from the PRISMA web page, and is an adapted version of Table 3 in Moher, et al. [52]: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement.

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	Title page
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	1 and 6
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	11
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☒	☐	7
Support					
Sources	5a	Indicate sources of financial or other support for the review	☐	☒	11

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
					No funders/ sponsors
Sponsor	5b	Provide name for the review funder and/or sponsor	☐	☒	Not applicable
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☐	☒	Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	3-6
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	6
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	8
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	7
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	Supplementary File 3
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	8
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	8

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	9
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	Box 1
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	Box 1
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	9
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☐	☒	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	10
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☐	☒	

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SUPPLEMENTARY FILE 3

Tentative search strategy: PubMed

Last updated on: 19.01.22

Question 2: How is the concept of frailty described and understood by older people, their significant others, and nurses in long-term care contexts?

PubMed	**Search block: Older people (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#1	Aged	"aged"[MeSH Terms] OR "aged"[All Fields]	5,765,926
#2	Elderly	"aged"[MeSH Terms] OR "aged"[All Fields] OR "elderly"[All Fields] OR "elderlies"[All Fields] OR "elderly s"[All Fields] OR "elderlys"[All Fields]	5,823,455
#3	Older	"older"[All Fields] OR "olders"[All Fields]	496,898
#4	Combination:	**#1 OR #2 OR #3**	5,978,243

PubMed	**Search block: Significant others (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#5	Significant others	"significant"[All Fields] AND "other*"[All Fields]	763,016
#6	Informal caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("informal"[All Fields] AND "caregiver*"[All Fields])	92,958
#7	Family	"family"[MeSH Terms] OR "family"[All Fields] OR "families"[All Fields] OR "family s"[All Fields] OR "familys"[All Fields]	1,542,673
#8	Relatives	"relative"[All Fields] OR "relatives"[All Fields] OR "relative s"[All Fields]	984,365
#9	Family caregivers	"caregivers"[MeSH Terms] OR "caregiver*"[All Fields] OR ("family"[All Fields] AND "caregiver*"[All Fields])	92,958
#10	Spouses	"spouse s"[All Fields] OR "spouses"[MeSH Terms] OR "spouses"[All Fields] OR "spouse"[All Fields]	34,339
#11	Husbands	"husband s"[All Fields] OR "husband"[All Fields] OR "husbands"[All Fields]	14,379
#12	Wives	"wife"[All Fields] OR "wives"[All Fields] OR "wife s"[All Fields]	11,491
#13	Next-of-kin	"Next-of-kin"[All Fields]	1,920
#14	Combination:	**#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13**	3,174,444

PubMed	**Search block: Nursing staff (P)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#15	Nurse	"nurse s"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR "nurse"[All Fields] OR "nurses s"[All Fields]	408,405

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#16	Nursing personnel	"nursing staff"[MeSH Terms] OR ("nursing"[All Fields] AND "staff"[All Fields]) OR "nursing staff"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields]) OR "nursing personnel"[All Fields] OR "nurses"[MeSH Terms] OR "nurses"[All Fields] OR ("nursing"[All Fields] AND "personnel"[All Fields])	365,108
#17	Healthcare assistants	"allied health personnel"[MeSH Terms] OR ("allied"[All Fields] AND "health"[All Fields] AND "personnel"[All Fields]) OR "allied health personnel"[All Fields] OR ("healthcare"[All Fields] AND "assistants"[All Fields]) OR "healthcare assistants"[All Fields]	56,879
#18	Healthcare aides	("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields]) AND "aides"[All Fields]	1,248
#19	Nursing assistants	"nursing assistants"[MeSH Terms] OR ("nursing"[All Fields] AND "assistants"[All Fields]) OR "nursing assistants"[All Fields]	8,416
#20	Nursing aides	("nursing"[MeSH Terms] OR "nursing"[All Fields] OR "nursings"[All Fields]) AND "aides"[All Fields]	1,843
#21	Formal caregivers	("formal"[All Fields] OR "formalized"[All Fields]) AND ("caregivers"[All Fields] OR "caregivers"[MeSH Terms] OR "caregivers"[All Fields] OR "caregiver"[All Fields] OR "caregiving"[All Fields])	2,921
#22	Combination:	**#15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21**	526,064

PubMed	**Search block: Frailty (I)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#23	Frail	"frail"[All Fields] OR "frails"[All Fields] OR "frailty"[MeSH Terms] OR "frailty"[All Fields] OR "frailness"[All Fields]	34,147

PubMed	**Search block: Long-term care (C)**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#24	Long-term care	"long term care"[MeSH Terms] OR ("long term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields] OR ("long"[All Fields] AND "term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields]	158,645
#25	Primary care	"primary health care"[MeSH Terms] OR ("primary"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "primary health care"[All Fields] OR ("primary"[All Fields] AND "care"[All Fields]) OR "primary care"[All Fields]	519,348
#26	Community healthcare	"community health services"[MeSH Terms] OR ("community"[All Fields] AND "health"[All Fields] AND "services"[All Fields]) OR "community health services"[All Fields] OR ("community"[All Fields] AND "healthcare"[All Fields]) OR "community healthcare"[All Fields]	453,397
#27	Community dwelling	"independent living"[MeSH Terms] OR ("independent"[All Fields] AND "living"[All Fields]) OR "independent living"[All Fields] OR ("community"[All Fields] AND "dwelling"[All Fields]) OR "community dwelling"[All Fields]	55,793
#28	Community nursing	("community"[All Fields] AND "nursing"[All Fields]) OR "community nursing"[All Fields]	85,995
#29	Home healthcare	("home environment"[MeSH Terms] OR ("home"[All Fields] AND "environment"[All Fields]) OR "home environment"[All Fields] OR "home"[All Fields]) AND ("delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR "healthcare"[All Fields] OR "healthcare s"[All Fields] OR "healthcares"[All Fields])	68,971
#30	Home nursing	"home nursing"[MeSH Terms] OR ("home"[All Fields] AND "nursing"[All Fields]) OR "home nursing"[All Fields]	72,058

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#31	Nursing home	"nursing homes"[MeSH Terms] OR ("nursing"[All Fields] AND "homes"[All Fields]) OR "nursing homes"[All Fields] OR ("nursing"[All Fields] AND "home"[All Fields]) OR "nursing home"[All Fields]	99,292
#32	Combination:	**#24 OR #25 OR #26 OR #27 OR #28 OR #29 OR 30 OR #31**	1,155,165

PubMed	**Combination of blocks**		**19. Jan 2022**
Search #	**Query**	**Search string**	**Results**
#33	Combination (P):	**#4 OR #14 OR #22**	8,752,419
#34	Combination (PIC):	**#23 AND #32 AND #33**	11,877

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