

BMJ Open Facilitators and barriers to implement nurse-led physical activities for people with dementia in nursing homes: a protocol for a mixed-methods systematic review

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ABSTRACT

Introduction Dementia is a major neurocognitive disorder and accounts for a great proportion of nursing home residents. Bodily symptoms such as gait, balance difficulties and muscle weakness are common in people with dementia. Physical activities are important to maintain and promote physical functioning and activities of daily living.

Nurses are a prone stakeholder to deliver physical activity interventions in nursing homes. However, several barriers have been reported for implementing nurse-led physical activity programmes. Also synthesised strategies for sustainable implementation in nursing homes are lacking. We, therefore, aim to synthesise the evidence on physical activity interventions which can be led by nurses and to identify facilitators and barriers of sustainable implementation of physical activity for people with dementia.

Methods and analysis We will conduct a mixed-methods systematic review to (1) describe the characteristics of nurse-led physical activities for people with dementia living in nursing homes and to (2) determine facilitators and barriers for sustainable implementation of nurse-led physical activities for people with dementia in nursing homes. We will search four different electronic databases, do forward and backward citation tracking and will web-search additionally. We will also search through guideline databases. Two reviewers will independently screen the identified studies for their eligibility. Data extraction and critical appraisal of included studies will be performed by one reviewer and double-checked by another reviewer. We will analyse the data using an integrative mixed-method synthesis and we will summarise the findings narratively.

Ethics and dissemination No ethics approval is needed to perform this systematic review. We will publish our review results as scientific and non-scientific journal articles and we will hold an oral or a poster conference presentation. The review results will inform the development of structured and easy to understand guidance for nurses to initiate tailored physical activities for people with dementia in nursing homes.

Strengths and limitations of this study

- A comprehensive literature search consisting of database searching, citation tracking and supplementary guideline searching with no restrictions to publication date or study design is a strength of this study.
- A mixed-methods systematic synthesis combining evidence from multiple study designs and sources is a strength of this study.
- Involvement of key stakeholders such as nursing experts, nursing managers, stakeholder associations and physiotherapy throughout the review process will allow us to develop recommendations for clinical practice and can be seen as a strength of this study.
- Our study is limited since we rely on published reports of empirical studies and we will exclude studies that do not report physical outcomes in the title and/or abstract.

INTRODUCTION

Dementia is a degenerative and major neurocognitive disorder accompanied by changes of emotional, social, cognitive and physical behaviour.¹ The increasing dependence of people with dementia leads to formal and informal care.² Among European countries, the number of people with dementia living in nursing homes highly varies between 1 and 8 per 10 nursing home residents. In Switzerland, people with dementia account for 60% of nursing home residents.³ Bodily symptoms such as limitations with regard to gait, balance and muscle strength are common among people with dementia.⁴ Physical activity can help people with dementia to mitigate these symptoms.⁵

Physical activity is any bodily movement produced by skeletal muscles that requires energy expenditure. Exercises are physical activities and defined as planned, structured,

repetitive and purposeful actions to improve or maintain one or more components of physical fitness. The resulting effects depend on the intensity and amplitude of the physical activity performance and the person's age.⁶ Physical activity is important to maintain and promote physical functioning. Although there is no single definition, physical functioning describes balance-strength, coordination-strength and muscle-strength capabilities of the body.⁷ A core outcome parameter for physical functioning is fall rate. It has been shown that it can be significantly lowered by physical activity in people with dementia.⁸ Physical activity is also important to maintain and promote activities of daily living, and therefore, independence in people with dementia.^{7,9} Activities of daily living are characterised by tasks that individuals perform to manage their everyday routines (eg, eating, clothing, walking, toileting). A current Cochrane review concludes that physical exercises improve the ability to perform activities of daily living of people with dementia.⁵

To perform activities of daily living, physical resources are necessary and can be trained by healthcare professionals.¹⁰ As nurses and nursing and healthcare assistants are the primary carers in nursing homes, they are prone to be a key stakeholder to offer and implement physical activities for people with dementia. However, a systematic and specific synthesis of facilitators and barriers to implement nurse-led physical activities for people with dementia in nursing homes is lacking.¹¹ There are global recommendations regarding the implementation of physical activities for community-dwelling people with dementia.^{12,13} Implementation facilitators are participation in preferred physical activities and an individually tailored adoption of exercises for people with dementia. Inhibitors include the unfamiliarity of healthcare providers with the beneficial impact of physical activities, the characteristics of physical activity programmes, and techniques to deliver them tailored to the needs of individuals with dementia. A barrier for the implementation of nurse-led physical activity in nursing homes is the lack of easy to understand and process information.^{14,15}

To address existing challenges and to develop tailored strategies for successful and sustainable implementation of physical activity interventions in nursing homes, it is important to understand implementation facilitators and barriers and to derive context-sensitive implementation strategies for clinical practice. We, therefore, aim to answer the following review questions:

1. Which nurse-led physical activities are used to maintain and promote physical outcomes of people with dementia living in nursing homes and what are the intervention characteristics?
2. What are facilitators and barriers for sustainable implementation of physical activities for people with dementia in nursing homes?

The results of our review will provide a detailed overview on characteristics of nurse-led physical activities for people with dementia living in nursing homes as well as facilitators and barriers for their context-sensitive

implementation based on evidence from a range of study designs and sources.

METHODS AND ANALYSIS

We will conduct a mixed-methods systematic review to (1) describe the characteristics of nurse-led physical activities for people with dementia living in nursing homes and to (2) determine facilitators and barriers for sustainable implementation of nurse-led physical activities for people with dementia in nursing homes. To structure our review protocol, we used the 2015 statement of the Preferred Reporting Items for Systematic review and Meta-Analysis Protocols.¹⁶

Eligibility criteria

To answer our review questions, we are interested in various study designs and study material related to nurse-led physical activities for people with dementia living in nursing homes. We aim at collecting all information on the development, piloting, evaluation and implementation of nurse-led physical activities for people with dementia in nursing homes and to gain a comprehensive overview of intervention characteristics and potential determinants for their implementation.^{17,18} We define nurse-led physical activities as interventions such as exercises, walking, or dancing that are initiated and/or conducted by nurses or nursing or healthcare assistants.

Table 1 provides a detailed overview of inclusion and exclusion criteria related to the two review questions. To answer our first review question, we will include experimental and quasi-experimental studies assessing nurse-led physical activities for people with dementia on physical outcomes in nursing homes published in English, French or German. Physical outcomes such as physical functioning, activities of daily living, or falls need to be reported in the title and/or abstract of a reference. Reports describing the intervention design or the development of nurse-led physical activities will also be included. Studies will not be restricted to type and severity of dementia, gender, age, ethnic background and number of study participants, control type or publication year or publication type. Studies on people with no formal diagnosis of dementia will also be included since there is often no formal medically diagnosis of dementia in long-term care.¹⁹ We will exclude studies with participants reporting mild cognitive impairment and mixed samples with less than 75% of people with dementia (if the results are not reported separately). We will include studies that refer to the nursing home setting. We define nursing home as a setting where people (can) receive 24-hour professional nursing care as there exists variations and country-specific adaptations. Accordingly, we will also include studies from care homes, homes for the aged, and residential aged care facilities.²⁰ Studies conducted in other institutionalised care facilities such as assisted living facilities or non-institutionalised care will be excluded. We will also exclude mixed settings with less than 75% of people with dementia from nursing homes (if the results are not reported separately). Further, abstract only publications, editorials, commentaries and letters will be excluded.

Table 1 Inclusion and exclusion criteria

Domain	Inclusion criteria	Exclusion criteria	Review question
Population	People with all types of dementia with no restriction to severity, gender, age, ethnic background, diagnostic procedures and no of study participants	People with mild cognitive impairment and mixed samples with less than 75% people with dementia (if the results are not reported separately)	1/2
	Health professionals and/or family members of people with dementia and/or nursing home managers with no restriction to number of study participants (if implementation facilitators and barriers are reported belonging to a specific nurse-led physical activity intervention for people with dementia in nursing homes)	–	2
Setting	Nursing homes and other institutionalised care settings (eg, care homes, homes for the aged, residential-aged care facilities)	Other institutionalised care facilities (eg, assisted living facilities, day care) or non-institutionalised care	1/2
Intervention	Physical activities (eg, exercises, walking, dancing) initiated and/or conducted by nurses, or nursing or healthcare assistants (nurse-led)	Passive movement therapies	1/2
Study aim	Assessing the effects/effectiveness/efficacy/feasibility of nurse-led physical activities	–	1
	Description of intervention design and modelling or developing nurse-led physical activities	–	1
	Determining facilitators and/or barriers to implement nurse-led physical activities	–	2
Control	Every and no control type	–	1
Outcome	Physical outcomes (eg, physical functioning (lower and upper body), activities of daily living, falls) reported in the title and/or abstract of a reference	–	1
Phenomena of interest	Implementation facilitators and barriers (eg, acceptance, feasibility, resources) reported belonging to a specific and evaluated nurse-led physical activity intervention for people with dementia in nursing homes	–	2
Study design	Experimental and quasi-experimental studies (controlled clinical trials, before-and-after study)	Reviews	1
	All primary study designs (eg, observational studies, interventional studies, qualitative studies, mixed-methods studies, process evaluations)	Reviews	2
Publication year	No restriction	–	1/2
Publication language	English, French, German	–	1/2
Publication type	Any published reports of empirical studies (eg, journal articles, conference proceedings, preprints)	Abstract-only publications, editorials, commentaries, letters, study protocols, theses, registry entries, books	1/2
	Online and offline material associated with the intervention	–	1

To answer our second review question, it requires evidence from studies determining facilitators and/or barriers to implement nurse-led physical activities in nursing homes reported belonging to a specific nurse-led physical activity intervention for people with dementia (eg, acceptance, feasibility, resources). This can be reached by using various study designs such as observational studies, interventional studies,

qualitative studies, mixed-methods studies and process evaluations. No study design will explicitly be excluded. As (mixed) study populations, we will include studies with people with dementia, health professionals, family members of people with dementia and nursing home managers with no restriction to number of study participants that report implementation facilitators and barriers of nurse-led physical activity

interventions for people with dementia in nursing homes. Inclusion criteria concerning publication year, language, and study type will be equal to the first review question.

Information sources

Database searching and supplementary search methods

We will perform a comprehensive literature search combining electronic database searching with supplementary search methods.²¹ We will search MEDLINE via PubMed, CINAHL, Cochrane Central Register of Controlled Trials via Cochrane Library, and Web of Science Core Collection. As a supplementary search method, we will conduct forward and backward citation tracking of included studies using Scopus. We selected MEDLINE/PubMed, CINAHL, Web of Science Core Collection, and citation tracking since it is an optimal combination of search methods in dementia care research.²² To identify additional studies that are not indexed in the above listed databases and to search for study material related to nurse-led physical activity interventions, we will conduct web searching using Google and Google Scholar. To identify pertinent clinical practice guidelines, we will search the GIN international guideline library and registry of guidelines in development,²³ FIT-nursing care,²⁴ as well as guidelines provided by the Association of the Scientific Medical Societies in Germany,²⁵ and the German ZQP Foundation.²⁶

Study teams' request

In case of missing information on intervention characteristics or incomplete outcome data, we will reach out to study teams and request the missing information via mail. Two reminders will be sent on a weekly basis. In case of no answer by study teams after 3 weeks, we will declare the information as missing.

Search strategy

We will use database-specific search strategies based on controlled vocabulary (ie, MeSH for MEDLINE, Subject Headings for CINAHL) and unspecified free text terms. The search strategies will be developed and peer reviewed within the review group using PRESS (Peer Review of Electronic Search Strategies).²⁷ We will use three search components: dementia, physical activity and nursing homes. The search strings will be adapted from available reviews on dementia,²⁸ physical activity⁵ and nursing homes²⁹ that are transparently reported. Search terms and synonyms will be complemented by preliminary searches in MEDLINE/PubMed (ie, title and abstracts of eligible studies) and the experience of the review team members. We will search unspecified free text terms in the title, abstract and keywords field, if available.

Box 1 shows the final search string for MEDLINE/PubMed. We will manually translate the search string considering database-specific functions and techniques to use it in the other databases. For databases that do not provide systematic search engines, we will use highly relevant search terms and combinations to specifically

Box 1 Search string for Medline via PubMed (searching all fields)

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("DEMENT**[TIAB] OR "ALZHEIMER**[TIAB] OR "MAJOR
NEUROCOGNITIVE DISORDER**[TIAB] OR "DEMENTIA"[MESH])
AND
("Nursing Homes"[MESH] OR "Homes for the Aged"[Mesh] OR "Long-
Term Care"[Mesh] OR "longterm care"[tiab] OR "long-term care"[tiab]
OR "nursing home**"[tiab] OR "Care home**"[tiab] OR "homes for the
aged"[tiab] OR "ELDERLY CARE" OR (resident*[tiab] AND (longterm*[-
tiab] OR long-term*[tiab] OR institut*[tiab])))
AND
(Exercise[MESH] OR "Exercise Therapy"[MESH] OR "Exercise
Test"[MESH] OR DANCING[MESH] OR Swimming[MESH] OR "Fitness
Centers"[MESH] OR Walking[MESH] OR Yoga[MESH] OR "Tai
Ji"[MESH] OR "Physical Fitness"[MESH] OR "Exercise Movement
Techniques"[MESH] OR "Physical Exertion" [MESH] OR exercis*[TIAB]
OR "physical activit**"[TIAB] OR cycling[TIAB] OR swim*[TIAB] OR
gymn*[TIAB] OR walk*[TIAB] or treadmill[TIAB] OR HIKING[TIAB] OR
danc*[TIAB] OR yoga*[TIAB] OR "tai chi"[TIAB] OR "TAI JI"[TIAB] OR
fitness*[TIAB])
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retrieve eligible articles. The search strategies for all databases and search engines will be reported in full detail as part of the final review report.

Study records

Data management

A bibliography management tool will be used to manage the number of reference retrievals and to detect duplicates (ie, database search, supplementary search methods and web searching). Throughout the study selection process, we will use Rayyan to ensure blinded study selection.³⁰

Selection process

Two reviewers will independently assess titles, abstracts, and, if eligible, full texts for inclusion and exclusion. total of 5%–10% of titles and abstracts as well as full texts will be screened independently by all reviewers. This calibration module will help to understand and apply our eligibility criteria. Following the screening process of the two phases (titles and abstracts, full texts), conflicting assessments will be discussed within the screening team and with a third member of the review team—if necessary.

Data collection process

Data extraction sheets will be piloted and therefore preliminary applied using ten percent of the included studies. Subsequently, one reviewer will extract data and a second reviewer will double-check data extraction for accuracy. Extraction results will be discussed between the person extracting the data and the person double-checking the data extraction and with a third member of the review team—if necessary.

Data items

We will perform data extraction according to the review questions using tabulated templates. To answer our first review question on interventions and their characteristics,

we will extract data on study design, country, population (ie, age, gender and type and severity of dementia) and setting (eg, nursing home, care home), intervention and control intervention(s), outcome(s) and outcome measurement(s), and results related to physical functioning of people with dementia. To provide a detailed overview of intervention and control intervention characteristics and their theoretical background, we will apply the Template for Intervention Description and Replication (TIDieR).¹⁸ TIDieR contains items on intervention details such as format, duration, frequency, dose, place and material used, and information on the background and expertise of interventionists which is helpful to describe intervention characteristics.

To answer our second review question on implementation facilitators and barriers, we will use the template provided by the Integrated Sustainability Framework³¹ that was previously used in another systematic review.³² The Integrated Sustainability Framework focuses on long-term implementation of health interventions and contains items that are related to factors determining sustainability among clinical contexts and interventions.³¹ It covers contextual factors (eg, management and leadership, sociopolitical context), intervention processes (eg, training and support, fidelity, adaptation), characteristics of the interventionists and population (eg, attitudes, motivation) and characteristics of the intervention (eg, adaptability, benefits, costs).

Critical appraisal of individual studies

To critically appraise the quality of individual studies, we will use the Mixed Methods Appraisal Tool (MMAT).³³ MMAT can be applied to multiple study designs such as interventional, observational, qualitative and mixed-methods studies. The assessment contains overall quality criteria (eg, if a study contains a clear research question/aim) as well as basic quality criteria related to each of the study designs mentioned above (eg, if findings were adequately derived from the data in qualitative studies, complete outcome data in randomised controlled trials, appropriateness of measurement(s) in observational studies). One reviewer will conduct critical appraisal and a second reviewer will double-check it. We will discuss appraisal results between the person appraising the studies and the person double-checking the critical appraisal and with a third member of the review team—if necessary.

Data synthesis

For data synthesis, we will use tabulated data extractions and apply an integrative mixed-methods synthesis of the evidence coming from multiple study designs and source material.³⁴ We will write a narrative summary for intervention characteristics (addressing the first review question) and for implementation facilitators and barriers (addressing the second review question) of nurse-led physical activities for people with dementia in nursing homes.

Patient and public involvement

The results of our review will inform the development of best-practice nurse-led physical activity for people with dementia in (Swiss) nursing homes considering context-sensitive implementation strategies. Therefore, we will recruit an expert panel. Six to ten persons will be part of the local expert panel representing nursing home managers, nursing experts, stakeholder associations and physical therapists. The collaboration with the expert panel will cover two main tasks. First, our review questions will be complemented by subquestions related to the specific interests of the experts and the Swiss nursing home context. Second, the results of our review will be presented to and discussed with the experts. By merging the results of our review with the perspectives of the experts, we aim at presenting a detailed and consented guidance of physical activities and expert view regarding successful and sustainable context-sensitive implementation factors for clinical practice.

The meetings between the review team and expert panel will take place in a conference room at the Eastern Switzerland University of Applied Sciences in St.Gallen, Switzerland. If restrictions due to COVID-19 will take place, the expert panel will be conducted virtually using a web-based teleconference tool. The expert panel will receive written information and material proceeding before each meeting.

Ethics and dissemination

Taking part in the expert panel will indicate consent on participation. There will be no mandatory participation and experts may leave the process at any time once experts consented to participate. Experts will not receive an incentive for taking part in the expert panel. With regard to the Swiss Human Research Act, our expert panel does not apply to research on human diseases and the human body.³⁵ Therefore, no ethical approval is needed.

We will publish our review results as both scientific and non-scientific journal articles and an oral or a poster conference presentation will be held.

The review results will inform the development of structured and easy to understand guidance for nurses to initiate tailored physical activities for people with dementia in nursing homes. Nursing staff with various degrees from assistants or aides to postgraduates will be able to use the guidance in their daily practice. This will be achieved by different sections with tailored information for nurses holding various skill levels. The guidance will be used as a central dissemination tool to facilitate the implementation of nurse-led physical activities for people with dementia in the (Swiss) nursing homes.

Study status

We will start our search in September 2021 and expect to complete our review in December 2022.

Current study status: preliminary searches: no; piloting of the study selection process: no; formal screening

of search results against eligibility criteria: no; data extraction: no; data analysis: no.

Contributors JH and SH were involved in developing the idea for this review. JH, JV and SH made substantial contributions to the conception and design of the work. JH and SH drafted the manuscript which was critically reviewed by JH, JV and SH for important intellectual content. JH, JV and SH gave their final approval of the manuscript version to be published and agreed to be accountable for all aspects of the manuscript.

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Disclaimer The funder had no influence on the design and the results of this research.

Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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