An overview of systematic reviews for older people who become frail

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Eileen Mitchell, Sanjib Saha, Ellen Conlon, Fiona Walshe, Finn MacGearailt, David Mockler, Dominic Trépel

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Review question

The objective of this overview is to synthesize the findings of systematic reviews for the treatment of frailty symptoms.

To identify intervention components that are associated with preventing or slow down frailty related symptoms amongst the elderly.

Searches

We will search the following databases; MEDLINE, PsycINFO, CINAHL Web of Science, the Cochrane Library, EMBASE, and the CRD databases.

Papers from inception to Jan2021 and full papers available in English will be included. This time frame has been selected to include the growing interest in frailty due to the increased focus of an aging population. Variations of the following search terms will be used ‘Frailty’ AND ‘Frail aged’ AND ‘Older adult’ AND ‘Systematic review’ OR ‘Meta-analysis

Types of study to be included

Publications will only be included if they are systematic reviews related to frailty.

Conference abstracts or descriptive studies will be excluded.

Studies will be excluded if full text is not available after reasonable attempts to locate it.

Condition or domain being studied

Frailty is a health condition gathering increased academic interest with its reported correlation with an aging population. Frailty is often sud-divided in the literature to pre-frail or mild frailty, increasing the number of persons who fall under the frailty umbrella term. There have been many risk factors identified for frailty which are falls, incontinence, social isolation, multi-morbidities, medicine management challenges, and reduced cognition/ delirium (Clegg et al, 2013). Frailty has many risk factors and therefore is likely to require a variety of interventions to address it adequately. A recent systematic review completed by Apostolo (2018) investigated the effectiveness of interventions to prevent the progression of frailty and reported mixed results regarding the effectiveness of frailty interventions and called for further research to reinforce the current evidence and to examine the impact of the benefits of different interventions. Due to this plethora of reviews, a logical next step is to complete a systematic review providing an umbrella overview of the evidence, allowing the findings of completed studies to be compared and contrasted.

Participants/population

Studies whose participants are described by the authors as frail or as having frailty in the title, abstract and/ or methods. Frail elderly adults aged over 60 years old, this is the age group who are most likely to be frail and therefore in need of interventions and services.

Intervention(s), exposure(s)

The treatment of frailty symptoms.

To identify intervention components that are associated with preventing or slow down frailty related symptoms amongst the elderly.

We wil consider systematic reviews that measured the effects of any intervention which aims to treat the symptoms of frailty, including non pharmacological interventions (exercise, education) and pharmacological interventions drugs, and assessment exercises.
Interventions will be considered as such if they are described as structured and independent activities with the primary aim of reducing or preventing the progression of frailty.

Comparator(s)/control

The review will have included studies of interventions compared to either usual care, placebo or another intervention.

Context

The prevalence of individuals living with frailty is increasing globally amongst an aging population, all requiring support and resources to age successfully (Menon & Bryant, 2019). Thus, much demand is placed on precious healthcare resources necessitating an appropriate continuum of care from acute to community-based rehabilitation services to meet the ongoing needs of this population to optimise outcomes especially quality of life (Bettger & Stineman, 2007).

Main outcome(s)

The objective of this overview is to synthesize the findings of systematic reviews for the treatment of frailty symptoms.
To identify intervention components that are associated with preventing or slow down frailty related symptoms amongst the elderly.

Primary screening outcomes: Frailty systematic reviews that have a Meta-Analysis
Secondary screening outcomes: Systematic reviews that have stated why no meta-analysis was included

Third screening outcomes: Systematic reviews that have RCTs

We will consider systematic review studies that include one of the following syndromes associated with Frailty, British Geriatrics society guidelines for these terms were also included and noted in brackets.

Dimension 1 :

L1: Frailty

L2: Falls (e.g. collapse, legs gave way, ‘found lying on floor’).

L2: Immobility (e.g. sudden change in mobility, ‘gone off legs’ ‘stuck in toilet’).

L2: Delirium (e.g. acute confusion, ’muddledness’, sudden worsening of confusion in someone with previous dementia or known memory loss)

L2: Incontinence (e.g. change incontinence – new onset or worsening of urine or faecal incontinence).

L2: Susceptibility to side effects of medication (e.g. confusion with codeine, hypotension with antidepressants).

L3: Nutrition

L3: Loneliness and Isolation

Dimension 2 on Study type:

S1:Prevalence/ incidence

S2: Identificastion / Diagnostic Test Accuracy

S3: Randomised Control Trials

S4: Epidemiology (risk to develop…)

S5: Epidemiology (sequalae/ implications of…)

S6: Cost of illness (economics 1)

S7:Economic evalution / cost effectiveness

S8: Other systematic reviews (e.g. S8a. Protocols, etc)

* Measures of effect

• ES – Effect size

• SMD – Standardised mean difference (95% CI)

• MD – mean difference (95% CI)

• Statistically significant -Yes / No

Additional outcome(s)

Clinical outcomes:

• Studies reporting overall functional status including measures of frailty and functional ability assessed using a validated tool such as Measures of functional ability

• Activities of Daily Living

• Barthel's ADL Index (BI)

• Functional Independence Measure (FIM)

• Physical functioning aspect of the Health-Related Quality of Life Short Form 36.

• Health-related Quality of life (EuroQol, EQ-5D)

• Mortality

Non-clinical outcomes:

• Healthcare Utilisation: hospital admission rates, intervention costs, costs related to health status

• Patient experience or satisfaction: studies reporting any validated measure of patient experience and satisfaction

• Hospital length of stay (LOS)

Measures of improvement (if any) which have a positive impact on the quality of life.

Costs of intervention, staff involved, duration of intervention, number of sessions.

Access health services/lengths of hospitalisation

* Measures of effect

• ES – Effect size

• SMD – Standardised mean difference (95% CI)

• MD – mean difference (95% CI)

• Statistically significant -Yes / No

Data extraction (selection and coding)

The aforementioned search keywords will be used to conduct the search on the previously listed search engines. Study records will then be imported to EndNote reference management software, organised and duplicates removed. The de-duplicated file will be imported to Covidence software to streamline the screening process, allowing multiple review team members to work simultaneously. One author will assess citations as meeting the inclusion criteria on the basis of title and abstract; of these, a second author will independently review 20% of excluded articles. Articles considered likely to meet the inclusion criteria (ie mentioning primary outcomes in the abstract) will be reviewed in full text. The full texts of these potentially eligible studies will be retrieved and independently assessed for eligibility, and any disagreements between the reviewers regarding study eligibility will be resolved through discussion and consensus, while a third reviewer will be sought for final decision if consensus is not met. Data will then be extracted from the studies identified for inclusion using a standardised Excel data extraction template, which will be piloted in Covidence to extract relevant data from the included studies.

Risk of bias (quality) assessment

Two authors will independently assess the methodological quality of included reviews based on the AMSTAR checklist. The tool includes 10 items from the original AMSTAR tool. The response options for most domains consists of “yes” and “no” while some domains contain the third option “partial yes”. Based on the overall score, the quality of each systematic review will be rated as high, moderate, low and critically low.

Strategy for data synthesis

A narrative data synthesis will be conducted for all included studies describing frailty characteristics, choice of comparator group, outcome measures, and follow-up assessment point. We will provide summaries of intervention effects for each review by calculating standardised mean differences (for continuous outcomes).

We are seeking to categorise studies which have relevance to each of the eight conditions AND also categorise by type of studies into the following categorises (S1:Prevalence/ incidence; S2: Identificastion / Diagnostic Test Accuracy

S3: Randomised Control Trials; S4: Epidemiology (risk to develop…); S5: Epidemiology (sequalae/ implications of…)

S6: Cost of illness (economics 1); S7:Economic evalution / cost effectiveness; S8: Other systematic reviews (e.g. S8a. Protocols, etc). so that the first stage of reporting (quantitatively) will be an map of the evidence in the 8 x 8 table.

If a sample of studies are deemed sufficiently consistent to enable the pooling of results, they will be synthesised for a meta-analysis using RevMan software.

If a meta-analysis is considered feasible, Cohen’s d effect size will be calculated as the standardised mean difference between the neurorehabilitation group and the comparator group in the cognitive/physical outcome measure at post-treatment, divided by the pooled standard deviation. Inverse-variance weighted, random effects modelling will be conducted to generate a weighted mean effect size and confidence intervals. Effect sizes will be described in accordance with the recommended cut-offs, >.20 = small, >.50 = medium, >.80 = large.

Heterogeneity will be analysed using the Q statistic $?^2$ test, with the I^2 index used to quantify the percentage

of variability across the studies. If heterogeneity is significant (p .10 alpha level, as recommended by Cochrane 2019), then appropriate moderator or subgroup analyses will be conducted to determine the explanatory potential of patient/rehabilitation characteristics on the effectiveness of neurorehabilitation.

Analysis of subgroups or subsets

If appropriate a subgroup analysis will be conducted to compare the efficacy of interventions to reduce the risk/ rate of frailty in adult populations. This is due to the literature reporting that these different categories of people have different physical abilities and therefore the same interventions may not be appropriate. Furthermore, analyses by intervention delivery format (group-based vs. individual), time out outcome assessment, the severity of frailty will be assessed, where possible.

Contact details for further information

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Type and method of review

Cost effectiveness, Epidemiologic, Intervention, Meta-analysis, Narrative synthesis, Prevention, Review of reviews, Synthesis of qualitative studies, Systematic review

Anticipated or actual start date

08 February 2021

Anticipated completion date

08 October 2021

Funding sources/sponsors

None

Conflicts of interest

Language

English

Country

Ireland, Northern Ireland

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Aged; Aged, 80 and over; Age Factors; Frail Elderly; Frailty; Humans; Signs and Symptoms; Therapeutics; Treatment Outcome

Date of registration in PROSPERO

22 February 2021

Date of first submission

20 February 2021

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

22 February 2021
26 February 2021