Effectiveness of interventions in preventing or reducing frailty in older adults – evidence based review

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BACKGROUND

- Frailty is an **age-related state** of decreased physiological reserves characterized by a **weakened response to stressors** and an increased risk of poor clinical outcomes.
- Frailty predisposes individuals to progressive decline in different functional domains (Figure 1) and contributes to the onset of geriatric syndromes (Clegg et al., 2013; Fried et al., 2004).

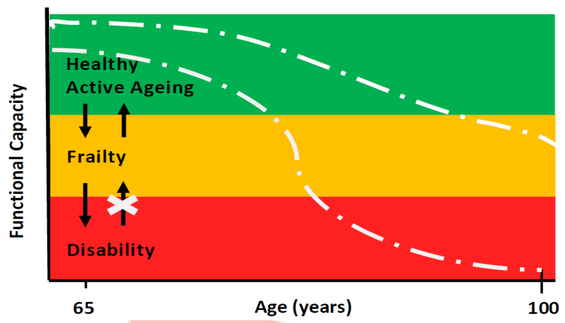

Figure 1. Trajectories of functional decline

- Evidence to support the malleability of frailty, its prevention and treatment, has been presented. However, no systematic review exists, which critically analyzes the existing evidence on interventions.

OBJECTIVES

- **Objective:** Summarize the best available evidence in relation to the effectiveness of the interventions in preventing progression of frailty in older adults.
  - *What is the effectiveness of interventions in preventing or reducing frailty in older adults, and how does it vary with degree of frailty?*
  - *Are there factors that influence the effectiveness of those interventions?*
  - *What is the economic feasibility of interventions for frailty?*

METHODS

- The review process was based on the Joanna Briggs Institute procedures (2014).

INCLUSION CRITERIA

- **Population:** Participants aged 65 and over, explicitly identified as pre-frail or frail and receiving health care and support services in any type of setting.
- **Intervention:** Interventions focusing on the prevention of frailty progress.
- **Comparator:** Usual care, alternative therapeutic interventions or no intervention.
- **Outcomes:** Frailty indicated by any validated scale or measurement or index, clinical outcomes (including functional and cognitive capacity, activities of daily living, quality of life, depression, drugs and prescription, adverse outcomes, etc.), economic outcomes.

!!! Studies where the selection of participants was based on specific disease/illness or terminal diagnosis were excluded.

SEARCH STRATEGY

- **Publication date:** from January 2001 to November 2015
- **Languages:** English, Portuguese, Spanish, Italian, Dutch
- **Databases for published studies:** CINAHL, MEDLINE, SCOPUS, EMBASE, Cochrane Central Register of Controlled Trials, Scielo
- **Databases for unpublished studies:** ProQuest Theses and Dissertations, OpenGrey, Banco de teses de CAPES, Dissertations Abstracts Online (e-Thos)

ASSESSMENT OF METHODOLOGICAL QUALITY

- **Assessment tool:** Joanna Briggs Institute Critical Appraisal Checklists for (i) Experimental Studies, (ii) Comparable Cohort and Case Control, (iii) Descriptive and Case Series, (iv) Economic Evaluations; all checklists were completed by two independent reviewers.
- Initially, the c**linical component** was evaluated, being included only the studies with ≥ 5 affirmative responses on the appraisal checklist;
- Then, the **economic component** was evaluated. No cut-off point for inclusion was applied.

RESULTS

- **21 RCTs included** (Figure 2), **2** of them focused on economic outcomes
- Main **methodological strengths**:
  - identical procedures used for outcomes assessment in control and intervention groups (100%)
  - use of statistical analysis (100%)
- Main **methodological weaknesses**:
  - lack of participant blinding (90%)
  - differences in treatment of the intervention and control groups (62%)
  - lack of cultural adaptation of the assessment tools (57%)

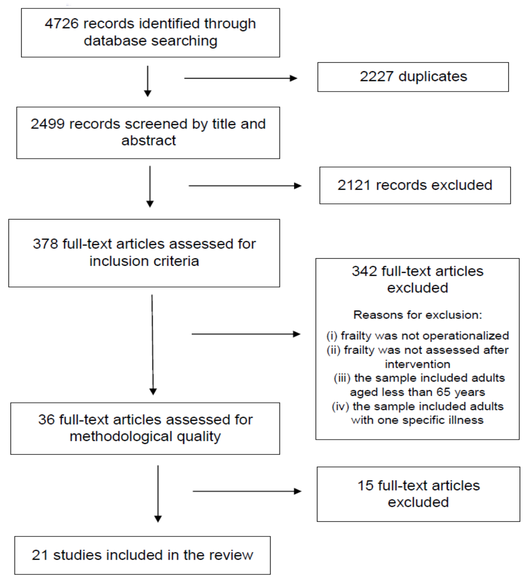

Figure 2. Flowchart for the search and selection process

- **High variability in the frailty definition** and operationalization of frailty indicators was also observed.
- **Interventions described in the included studies:** physical exercise (n=7), nutritional supplementation (n=3), hormone replacement (n=1), individually tailored management of frailty (n=5), combined treatment (n=4), home visits (n=4), group sessions (n=3), cognitive training (n=1), psychological therapy (n=1), educational session by a geriatrician (n=1).

FRAILTY

- **Interventions reducing frailty or postponing its progression**: exercise programs conducted in group, protein supplementation with physical exercise or alone, combined treatment, cognitive training.
- **Not universally effective:** group meetings, home visits and multidisciplinary approach.
- **Lack of efficacy:** home-based exercise or exercise performed individually, hormone supplementation, problem solving therapy.

SECONDARY OUTCOMES

- Different interventions had different effects on secondary outcomes. The positive changes were most frequently observed for **functional capacity, mental health and analytical parameters**.
- The economic analyses focused on the individually tailored management of frailty in comparison to usual care. They showed that the experimental intervention:
  - is more effective and **less costly** for **very frail** older adults from **community;**
  - is more effective and equally costly for **frail community-dwelling** older adults and **frail outpatients;**
  - is more effective and **more costly** for **frail inpatients.**

CONCLUSIONS

- This systematic review has demonstrated mixed effectiveness of frailty interventions, but with clear evidence of the usefulness of such interventions in careful evidence based circumstances, supporting clinical investment of resources into frailty intervention.

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