Effective interventions to improve nutrition and avoid social isolation in older people: a review with a systematic approach.

The italian group contribution to Work Package 5
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Scoping review

• The search of appropriate studies was conducted in the several literature databases.
• The search strategy was structured with the keywords divided into four groups stemming from the following terms: “elderly”, “health promotion”, “systematic review” and “effectiveness”.
• In WP5 report, only SR/M-As assessing intervention including components of health promotion and addressed to elderly persons >65 years old were further analysed.
• Italian group contribution was to deepen evidences in two field identified in the scoping review:
  • Nutrition
  • Social Isolation
Effectiveness of nutritional interventions addressed to elderly persons
• Nutrition is an integral part of health promotion throughout the life cycle
• Both obesity and malnutrition are risk factors for morbidity and disability
• Early nutritional interventions reduce the incidence of decline in independence, institutionalization, and improvement of overall quality of life
• Health promoting nutritional interventions vary in terms of approach, setting, scope, assessed outcomes and follow-up periods
• Still conflicting evidence
• **Aim:** systematically collect, evaluate and synthesize the findings on effectiveness of nutritional interventions targeted to elderly.
Materials and Methods

• The search terms derive from the terminology used in the scoping review
• The search was designed according to the PICO model and incorporated classical health promotion definition and types of intervention specified by McKenzie et al.
• All possible alternatives of following keywords were combined: *nutrition, old people, intervention* and *effectiveness.*
• The search was performed in MEDLINE first and subsequently adapted for the other databases
• **Time frame**: January 2000 - February 2016
• **Outcomes**: effects of the intervention for improvement of nutritional indices or any other outcome related to healthy ageing
• Great number of systematic reviews and meta-analyses identified → umbrella review
Umbrella review

The Joanna Briggs Institute Reviewers’ Manual 2014

Methodology for JBI Umbrella Reviews
Umbrella review

- **Quality Assessment**: JBI critical appraisal instrument for Systematic Reviews and Research Syntheses
- **Data collection**: JBI Data Extraction Form for Review for Systematic Reviews and Research Syntheses was used.
  - Study Details (data regarding authors, study participants and setting),
  - Search Details (databases used, number and types of studies included, as well as year range),
  - Appraisal (quality assessment of the included studies)
  - Analysis (outcomes assessed, main findings and their direction).
- **Data summary**: results from the individual reviews have been examined, grouped to categories and then tabulated for each type of intervention identified in the studies, and later discussed in a narrative review.
Potentially relevant papers identified by literature search n=2081

Duplicate citations removed n=462

Citations excluded after evaluation of title and abstract n=1455

Papers retrieved for full text examination n=164

Full-text articles excluded, with reasons n=119

Reviews potentially relevant for the topic of interest n=45

Reviews assessed for methodological quality n=23

Reviews included in the systematic review n=23
Results

- 23 eligible papers: 20 systematic reviews (7 performed also meta-analysis) and 3 Meta-analyses
- Studies included per systematic review: from 7 to 62
- 13 considered only RCT, others also non-randomized control trials, pre-post, cross-sectional and cohort studies
- 488 articles included

**Settings:**
- 9 mixed setting (community dwelling and hospital/nursing homes)
- 5 nursing homes and long-term care facilities
- 5 community dwelling
- 1 hospital
- 3 not defined

**Methodological quality:** 8 high quality, 11 moderate quality, 1 met all requirements of the methodological quality form
  - absence of analysis of likelihood for publication bias
  - lack of the methods to minimize errors in data extraction process
Classification of Interventions

1) Interventions with intake of supplements
   oral or liquid supplements
   vitamin D (alone or combined with calcium)
   protein-based formulas
   essential amino acid-rich supplements
   beta-hydroxy-betamethylbutirate
   vitamins and minerals

2) Environmental and organizational modifications of meals and dining aspects
   dietary enrichment (sensory attractive meals)
   mealtime assistance program at interpersonal level
   improving lighting in dining rooms
   home-delivered meal programs ("meals on wheels")

3) Educational interventions involving any kind of counselling or workshops
   educational sessions / professional counselling groups
   personalized education program / individualized dietary prescription
   learning sessions, peer support, and scheduled follow-up meetings

4) Other
   mixed interventions or other interventions that were not classifiable in the aforementioned groups
   written (manuals provided to each participant, medical care and exercise lessons, group conversation, relaxation)
Classification of Outcomes

28 specific outcomes → 4 categories

1) Functional outcomes
   • prevention of falls and fractures
   • hand grip strength/muscle strength
   • ADL - functional status – physical function

2) Anthropometric indices
   • body weight
   • BMI
   • lean body mass (LBM)
   • Anthropometric measures: arm muscle circumference (AMC), middle arm circumference (MAC) and triceps’ skin fold thickness (TSF)

3) Nutritional indices
   • caloric dietary and protein intake, general nutritional status, decrease of risk for malnutrition, improvement in eating performances, diet quality

4) Other
   • mortality, biochemical indices, health-related quality of life, health services utilization, mental health parameters
1) Functional outcomes (15 studies)

- The majority found not significant results
- One study could not draw any precise conclusions regarding the supplementation intervention on muscle function in sarcopenic old patients except for amino-acids (31)
  - **Muscle strength** was improved with oral and protein supplements but without statistical significance (27.23)
  - The same findings were reported for **hand-grip strength** in three studies after implementing the strategy of additional staff member (23), leucine supplementation (18) and protein-based formulas (11)
  - As concerning **functional status** Milne et al. reported a statistical significant improvement in ADL but in only one study out of 11
  - **vitamin D** (alone or in a combination with calcium) shows highly positive effects in elderly, with a 14%-19% risk of falls reduction in different studies
  - **Vitamin D + Ca** can slightly decrease hip fracture risk and significantly reduce the risk for non-vertebral and any other new fracture (24).
  - Two studies confirmed **educational intervention** effectiveness in reducing falls in aging individuals (28), while another reported positive effects on physical performance (36).
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<thead>
<tr>
<th>Interventions</th>
<th>Functional outcomes</th>
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<td>Functional status/physical function</td>
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<td>Environmental / organizational</td>
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<td>food improvement interventions</td>
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<td>services of an additional staff member</td>
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<td>Education, counselling, workshops</td>
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ns = not statistically significant improvement, *=statistically significant improvement, ↑↓=inconsistent findings,
¹Leu=leucine, ²HMB=Beta-hydroxy-beta-methylbutyrate, ³EAA=essential amino acids, ¹²³=findings obtained from 1 study
2) Anthropometric indices (11 studies)

• Supplementation programs yielded statistically significant improvements in participant’s body weight (18, 23, 30).

• BMI widely studied but not concordant evidences (2 studies were significant)

• Most of the interventions did not succeed in improving mass outcomes, except one study with amino-acid supplements

• Regarding anthropometric parameters, results across the included reviews varied a lot: 2 studies with oral/enteral or AAS supplementation had positive results
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<thead>
<tr>
<th>Interventions</th>
<th>Anthropometric indices</th>
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<td></td>
<td>Weight outcomes</td>
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<td>home-delivered meal programs</td>
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ns=not statistically significant improvement, *=statistically significant improvement, ↑↓=inconsistent findings, \(^1\)BMI=body mass index, \(^2\)LBM=lean body mass, \(^3\)AMC=arm muscle circumference, \(^4\)MAC=middle arm circumference, \(^5\)TSF=tricep skin fold thickness, \(^6\)Leu=leucine, \(^7\)HMB=Beta-hydroxy-beta-methylbutyrate, \(^8\)EAA=essential amino acids, \(^9\)AAS=amino acid supplement, \(^{1\times}\)=findings obtained from 1 study
3) Nutritional indices (11 studies)

- The most commonly reported result with statistical significance was an increase in dietary and caloric intake.
- The most successful interventions were food-based fortification (enrichment and densification), vitamin and minerals, proteins, oral supplements.
- “Meal on wheels” succeeded in increasing Dietary intake and quality, reducing malnutrition and food insecurity.
- Still, these results need to be interpreted with caution because of the high heterogeneity of the reviewed studies.
<table>
<thead>
<tr>
<th>Interventions</th>
<th>Nutritional status</th>
<th>Protein intake</th>
<th>Dietary/ caloric intake</th>
<th>Risk for malnutrition</th>
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<th>Eating performance</th>
<th>Diet quality</th>
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ns=not statistically significant improvement, *=statistically significant improvement, ↑↓=inconsistent findings, ¹=caloric intake, ²=findings obtained from 1 study
4) Other (11 studies)

• The most commonly studied: mortality, cognitive function and health services utilization
• Overall reviews showed positive effects but they generally failed to reach the statistical significance and included studies showing not concordant results.
• Multinutrient supplement strategy (27) and mixed intervention (36) obtained significant improvement of Mental Health outcome
• In three studies (11, 21, 23) the decline in mortality was shown, even though without statistical significance; the only significant reduction was seen in Milne et. al when analysis were limited to undernourished elderly (11).
<table>
<thead>
<tr>
<th>Interventions</th>
<th>Biochemical indices</th>
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<th>Mortality</th>
<th>Health services utilization</th>
<th>Knowledge on nutrition</th>
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ns=not statistically significant improvement, *=statistically significant improvement, ↑↓=inconsistent findings, ¹=Hb levels, cholesterol, diabetes risk indices, ²QoL=quality of life, , ³=episodes of infection, ⁴=days of infection, ⁵=statistically significant findings when the analysis was limited to undernourished, ¹=findings obtained from 1 study
Implications for practice and research

- Very studied field but questionable effectiveness → first umbrella review
- Many programs → many outcomes
- **Vitamin D** supplementation highly effective for falls and fractures prevention
- **Anthropometric indices**: some studies provided strong evidences for use of oral supplements while others demonstrated a few beneficial effects
- **Environmental and Organizational** nutritional interventions were usefull but low quality or heterogeneous studies
- **Oral supplements** (i.e. vitamins, protein based products) seemed to be the most effective and significantly related to the assessed outcomes (More than 50% of the included studies reported statistically significant results)
- **Muscle function** and **functional status** findings were either sparse or not significant, questioning the nutritional interventions’ effectiveness
- A definite association existed between the nutritional interventions and **dietary and caloric intake, weight change, weight gain and prevention of falls and fractures.**
Implications for practice and research

- Use oral supplements and proteins to promote weight gain and minimising the risk of undernutrition
- Use vitamin D and Ca++ to prevent falls and fractures
- Implement Educational strategies, mealtime interventions and home-delivered programs
• Strenght:
  • Wide period span (2000-2016)
  • possibility to identify the indices that deserve more attention
  • reliable and comprehensive

• Limitations
  • small sample sizes and short follow up periods
  • different populations and settings
  • heterogeneity in the way of measuring and reporting the results
  • selection and publication bias
Effectiveness of interventions for alleviating loneliness and social isolation among elderly persons
Loneliness and Social Isolation

• Social relationship protective against mortality (comparable to most famous risk factors such as smoking, alcohol, physical inactivity and obesity)
• Social involvement is a protective factor for dementia
• Age main risk factor for SI
• Several health promotion interventions have been carried out with conflicting and not always conclusive results
• **Aim**: to synthesize the effectiveness of existing interventions finalized to reduce SI with systematic approach
Definition

• **Loneliness**: subjective concept that concerns the way that people perceive, experience and evaluate lack of communication with other people.
  - Social loneliness: absence of a meaningful friendship, it takes less time to be resolved and it can be affected by gaining new acquaintances
  - Emotional loneliness: absence of an enduring intimate attachment to another. It can be influenced only by forming intimate bonds, which may take longer time to resolve

• **Social Isolation**: objective, often imposed, situation where a lack of meaningful and sustained communication is present, with minimal contact with family or the wider community.
  - structural social support: objective assessment of size and frequency, gives a quantitative dimension
  - functional social support: subjective judgment of the quality of emotional, instrumental and informational support provided by others

• **Epidemiology**: 7-17% social isolation, up to 40% loneliness.

• **Factors associated with loneliness and social isolation**
  - physical (e.g. BMI, vision/hearing, co-morbidities, alcohol);
  - Psychological (e.g. depression, social activities, religious engagement);
  - Economic (e.g. retirement status);
  - Work/family changes (e.g. death of family members, loss of close friends);
  - Environmental (e.g. living conditions, safety of living situation);
  - Demographic factors (e.g. age, gender, race, education)
Materials and methods

**Development of the search terminology:**

- The search terms derived from the terminology used in the scoping review.
- The search was designed according to the PICO model and incorporated classical health promotion definition and types of intervention specified by McKenzie et al.
- All possible alternatives of following keywords were combined: *social isolation, loneliness, old people, intervention and effectiveness*.
- A systematic search of MEDLINE, ISI Web of science, SCOPUS, The Cochrane Library, and CINAHL databases was performed.
Materials and methods

• **Inclusion criteria:**
  • Target elderly population (>65 years old)
  • aimed at promoting healthy ageing avoiding social isolation
• analysis of articles titles → abstracts → full text
• hand-searched the reference lists of the retrieved articles to identify additional relevant studies.
• The systematic review was undertaken according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines
Materials and methods

- **Data extraction:** standardized checklists containing information on intervention, type of study, participants’ characteristics, follow-up periods, settings, outcomes measured and main findings

- **Outcomes:**
  - social health (loneliness, social isolation and structural/functional social support)
  - mental health (depression, mental well-being)
  - physical health
  - quality of life

- **Quality Assessment:**
  - Quantitative studies → The Effective Public Health Practice Project (EPHPP) tool
  - Qualitative studies → criteria proposed by Salmon et al.
Reviews on the topics related to loneliness/SI (n=16)

Studies included in qualitative synthesis (n=20)

Quantitative research (n=15)

Qualitative research (n=5)
Findings from primary research

• From 2018 records found \( \rightarrow \) 16 reviews recovered and classified
  • Recent systematic review covering clinical trials and quasi experimental studies published until 2011
    \( \rightarrow \) UPDATE REVIEW
  • English language studies that regarded implementation of loneliness/social isolation interventions published between 2011 and 2016
    • quantitative research: 15 studies
    • qualitative research: 5 studies
Findings from the previous reviews

- Group interventions offering educational, support or social activities succeeded to develop, maintain and enhance social support networks (socialization effect?)
- Individual interventions worked as well but smaller sample led to weaker results
- Programs targeted at specific populations showed greater success (women, care-givers, widowed, physically inactive, people with serious mental health problems)
- Information and Communication Technologies (ICT) interventions contributed to improvements in connecting to the outside world, gaining social support, engaging in activities of interests and boosting self-confidence
- Role of community health nurses in reaching the most socially isolated (homebound) clients
- Open gap: poor information on rural residents

Globally positive result but weak methodologies
Finding from the quantitative research (15 studies)

- **Study design**
  - 4 RCT + 1 pilot study
  - 6 pre-post study
  - 4 quasi experimental studies

- **Setting**
  - 82% included community dwelling older adults
  - 18% home care residents

- **Follow-up**: 3 weeks - 2 years

- **Interventions (18)**:
  - Social support interventions (discussion, counselling, therapy or education) (7 studies).
  - Social activities (2 studies)
  - Physical activity (fitness programme or recreational activity) (3 studies)
  - Use of technologies (companion robot, telephone befriending intervention, internet use and Care TV intervention) (4 studies).
  - Singing sessions (1 study)
  - Horticultural therapy(1 study)
Quality assessment of quantitative primary research

- 87% had weak ratings - 13 % moderate
  - Blinding (not reported or lacking)
  - Selection Bias (not representative samples)
- If we do not consider the blinding section in the overall scoring, we would obtain better results
Mode of delivery

- Group: 61%
- One-to-one: 17%
- Mixed: 22%
Results - Social Health

Effectiveness of the interventions, regarding social health (SH) outcomes

- Group (N=11)
  - Non significant findings on SH: 6
  - Significant findings on SH: 5

- One-to-one (N=3)
  - Non significant findings on SH: 2
  - Significant findings on SH: 1

- Mixed (N=4)
  - Non significant findings on SH: 1
  - Significant findings on SH: 3
Results - Social Health

• Effectiveness of group interventions was confirmed in the update literature review
• Individual interventions worked as well but small number → low generalizability
• Complex programs incorporating various approaches seemed to provide most success
• Intervention targeted at specific populations showed greater success (i.e. women and ethnic minorities)
• ICT are a promising tool for tackling social isolation but does not guarantee quality of communication
• Reminiscence therapy can be a useful also for intergenerational connection
• The majority of the studies were conducted in urban areas → no solid data about rural ones
Results - Social Health

- Jones et al. explored the effects of the internet use, online shopping, email, Skype or FaceTime, and online news and entertainment significantly increased social contacts and reduced loneliness.

- Psychosocial effects of advanced companion robot Paro were shown to decrease loneliness in elderly from one retirement home (Robinson H).

- Interventions including groups of seniors and children that encouraged elderly participants to share their memories and promote interaction reduced loneliness.
Results - Mental health, physical health and quality of life

• Only few interventions reported outcomes on mental and physical health, showing rather limited effectiveness.
• Interventions incorporating physical activity did not reach firm conclusions or did not measure physical health outcomes.
• The guided computer use showed positive effects on mental well-being and quality of life.
• Social support intervention improved mental well-being.
Findings from the qualitative research (5 studies)

- **Study design:**
  - descriptive methodologies and mixed-method approaches
  - 4 group format and 1 individual intervention

- **Interventions:**
  - support, education and befriending intervention over the telephone (1 study).
  - Community engaged arts (CEA) programmes (artworks, singing) (3 studies)
  - Men sheds: socializing and learning new skills program (1 study)

- **Outcomes:** participants’ experiences, perspectives and opinions on the intervention itself
  - collected through semi-structured interviews, focus groups or dynamic observations.
Results

• All the intervention brought positive results
  • Expanding community connections
  • Developing a meaningful role
  • Affecting mental well-being
  • Reducing social isolation and increasing social contact
  • Providing mental stimulation
  • Encouraging greater health awareness
  • Development of supportive relationships
  • Increasing in self-confidence
  • New friendships
Quality assessment of qualitative primary research

- Assessed through criteria proposed by Salmon et al.
- Quite good in presenting the results but globally rather low quality
- None of the studies discussed the findings based on theories
- Interviewee recruitment process not clearly explained
- Choice of setting not discussed
- Small samples
- Selection bias
Conclusions

• The results from the update literature review confirmed the effectiveness of interventions aimed at reducing social isolation and loneliness of the elderly

• BUT weak methodology and poor quality studies

• Need to address groups at higher risk, such as rural populations, people with sensory impairments, migrant populations etc.

• Future research must address methodological issues with the purpose of gaining valid and reproducible findings
Thank you
• SCALE USATE SI
• COMMENTI PRINCIPAL REVIEW SI
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Objectives of WP5

• Assessment of available evidence related to health promotion interventions targeting the elderly

• Classification of interventions according to taxonomy of objectives and the validity of evidence

• Two stages: scoping review → systematic reviews and meta-analyses
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<tr>
<th>Stage 1</th>
<th>Scoping review</th>
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Literature Review: Emotional Health

Interventions for Alleviating Loneliness Among Older Persons: A Critical Review

Jiska Cohen-Mansfield, PhD, ABBP; Rotem Perach, MSc
Search strategy used in MEDLINE database of the systematic review.

(older OR elder* OR senior* OR geriatric OR aged OR ageing OR aging OR “Old age” OR “Old people”) AND (“social isolation” OR solitude OR aloneness OR loneliness OR “emotional isolation” OR “social participation” OR “social support” OR “social involvement”) AND ( promotion OR program OR programme OR plan OR intervention “Health promotion” OR prevention OR Campaign* OR “Health programme” OR “Health program” OR “Health prevention” OR “Social care” OR “Social intervention” OR Screening OR “Health education” OR “Health literacy” OR “Health communication” OR “Health advocacy” OR “Community advocacy” OR “Social campaign” OR “Social campaigns” OR “Health coaching” OR “Environmental change strategies” OR “Healthy environment” OR “Community mobilization” OR “Behavior modification” OR Screening OR “Primary prevention” OR “Health screening” OR “Support groups” OR “Social network” OR “Social gathering” OR “Health changes” OR “Legislation” OR “Regulation”) AND (Effectiveness OR Efficacy OR Efficiency OR Impact OR Evidence OR Outcomes)
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