

# BMJ Open Contextual factors associated with life-space mobility in community-dwelling older adults based on International Classification of Functioning, Disability and Health: protocol for a systematic review

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## ABSTRACT

**Introduction** Mobility decline compromises functionality and quality of life in old age. Life-Space Assessment (LSA) evaluates mobility considering interaction between person and environment. The International Classification of Functioning, Disability and Health (ICF) is a reference to identify and categorise the personal and environmental contextual factors associated to the LSA. Our objective is identifying contextual factors that may influence life-space mobility of older community-dwelling adults based on ICF.

**Methods and analysis** A systematic review of literature will be performed to identify studies published between 1 January 2001 and 10 May 2017 which investigates life-space mobility among older adults. Keywords will be entered into the electronic databases of MEDLINE (PubMed), EMBASE (OVID), CINHALL (EBSCO), Cochrane Central Register of Controlled Trials Cochrane Central (OVID), PsycINFO (EBSCO) and COCH (OVID). Five investigators will work on search databases and standardised screening of the articles. Mobility predictors will be separated into personal and environmental aspects, according to the ICF model. The results will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement, and then a meta-analysis will be performed, if applicable.

**Discussion** Knowledge about life-space mobility in community-dwelling older adults by examining related risk and protective aspects may help practitioners better approach older adults' mobility and prevent their decline in old age. Furthermore, researchers will have more clues for investigations into factors related to life-space mobility.

**Trial registration number** CRD42017064552.

## INTRODUCTION

Mobility has been defined as the ability to move oneself (either independently or by using assistive devices or transportation) within environments that expand from one's home to the neighbourhood and to regions beyond. It is possible to understand mobility

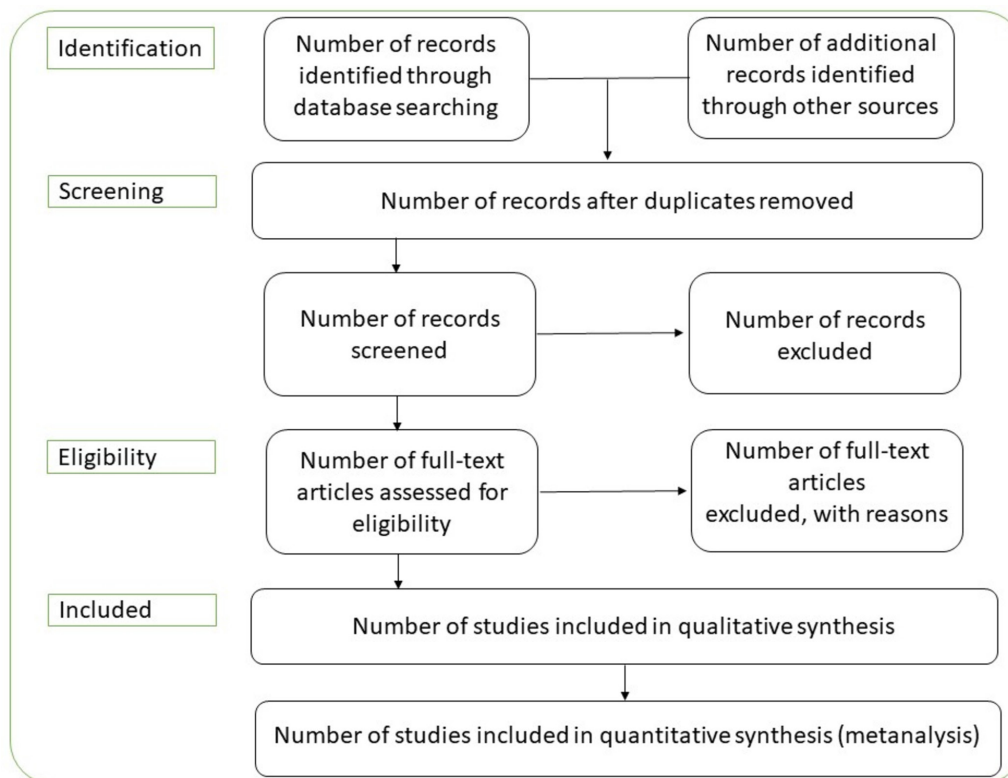
## Strengths and limitations of this study

- The article proposes to analyse the life-space mobility in community-dwelling older adults based on International Classification of Functioning, Disability and Health.
- Full-text screening will be independently conducted by two reviewers using a data collection standardised form.
- The contextual factors that may influence the decline in mobility among older adults can be a key point for possible intervention strategies.
- The study only described a protocol ongoing study.

in a holistic way.<sup>1</sup> According to Webber *et al.*,<sup>1</sup> in 'Mobility in Older Adults: A Comprehensive Framework', the mobility key determinants include cognitive, psychosocial, physical environmental, and financial influences.

The Life-Space Assessment (LSA) is a reliable and validated instrument to assess self-reported mobility which evaluates life-space mobility from an ecology perspective<sup>2</sup>; it is a promising component to guide intervention programmes and a popular item among scientists and gerontologists who conduct research on ageing linked to quality of life and healthy and active ageing.<sup>3-5</sup>

The LSA has been widely associated with different areas and health conditions in older people such as hospitalisation,<sup>6</sup> cognitive function,<sup>7 8</sup> falls,<sup>9</sup> muscle atrophy,<sup>10</sup> faecal incontinence,<sup>11</sup> oral health-related quality of life<sup>12</sup> and frailty.<sup>13</sup> Other studies have reported associations between LSA and contextual aspects such as characteristics of the physical environment and social networks.<sup>2 14 15</sup>



**Figure 1** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.

Auais *et al*<sup>16</sup> evaluated 1995 community-dwelling older adults in a multicentric study and identified the average LSA total score as 68.7 (SD: 21.2), while its distribution was significantly different across the five study sites ( $p < 0.001$ ) with averages ranging from 56.6 in Natal, Brazil to 82.6 in Kingston, Canada. This indicates that more developed cities presented better scores.

Although these associations have been studied, there has not yet been a systematic analysis of LSA on the International Classification of Functioning, Disability and Health (ICF) perspective.

The ICF was developed by the WHO in 2001,<sup>17</sup> and describes human functioning and disability as a dynamic interaction between health status (diseases, disorders, injuries, traumas, etc), body structure and function, activity and participation within contextual factors. According to the ICF, the contextual factors include the complete history of individuals' lives and lifestyles, comprising personal and environmental factors.<sup>17</sup>

Considering that the ICF is a valuable reference and framework for health outcome measurement,<sup>17</sup> we will use the ICF to identify and categorise the personal and environmental factors associated to LSA. This approach could help increase the clinical relevance and to internationally provide stronger evidence of the impact of LSA in older people.

## OBJECTIVES

Our objective is to explore studies about LSA in community-dwelling older adults by performing a systematic

review to identify the variables associated to LSA, then to classify them according to ICF structure in order to understand which contextual factors may influence the life-space mobility of community-dwelling older adults. Our hypothesis is that both environmental and personal aspects impact older adults' mobility.

## METHODS AND ANALYSIS

The current protocol has been registered in the PROSPERO database (registration number: CRD42017064552). The systematic review will follow the four-phase flow diagram (figure 1) put forth by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.<sup>18</sup>

## SEARCH STRATEGIES

Literature searches will be performed by the research team (HMJSB, BSO, CSG, JMP and ROG) from the Federal University of Rio Grande do Norte. We will use specific medical subject headings (MeSH) and words from 'all fields' to identify studies in MEDLINE (PubMed interface), EMBASE (OVID interface), CINHALL (EBSCO interface), Cochrane Central Register of Controlled Trials Cochrane Central (CCTR) (OVID interface), PsycINFO (EBSCO interface) and COCH (OVID interface) from their start date onwards. Details concerning search strategy are provided in online supplementary file 1. We will also search through a grey literature source (Google Scholar). Furthermore, we will search official websites of

active institutions in the fields of life-space mobility and/or life-space/ageing, along with bibliographic references of retrieved articles and relevant reviews.

The search strategy will combine the following themes or theme groups: (1) Elderly/Ageing; (2) Mobility; (3) 'Life-space Assessment'; (4) Questionnaire; (5) Environment. All articles and reports retrieved during the screening phase will be combined in an Endnote file, and duplicates will be extracted.

The complete search strategies are found in online supplementary file 1.

### Study inclusion criteria: participants and setting

Each study should meet the following criteria:

1. Sample composed of community-dwelling older adults aged 65 years or older.
2. Observational studies (cohort, case-control, cross sectional) and randomised controlled trial (RCT).
3. Mobility evaluated through life-space measurement (measurement criterion).
4. Papers published in Portuguese, English and Spanish (language criterion).
5. Papers published between 1 January 2000 and 10 May 2017.
6. The objective of the research is to determine the association between life-space mobility and contextual aspects (environmental and personal) or evaluated predictors, factors and determinants of life-space mobility (relationship criterion).

### Primary outcomes

LSA association with the following environmental contextual aspects (physical characteristics of the environment; interpersonal relations; legislation; use of products and technology) and personal contextual aspects (economic conditions; life course adversities; employability; attendance to medical appointments or hospitalisation; gender; race; age; lifestyle; different ways of facing problems; social background; level of education).

### Secondary outcomes

LSA association with aspects related to body structure and function, activity and participation: sensory, physical or mental illness, deficiencies or deficits, physical capacity, physical performance, activities of daily living and move around using transport.

## ANALYSIS STRATEGIES

### Study selection procedure

We will perform a standard data extraction template to extract the main details for every eligible study in terms of author, year, title, objective, sample size, country, design, life-space mobility measurement and main results.

The search process will be carried out by two researchers (CSG and HMJSB) and an expert librarian. Two researchers (HMJSB and BSO) will examine each title and abstract to identify a potentially relevant study

for review. Articles will be classified as: (1) included, (2) excluded or (3) uncertain using the 'covidence' site. The full text of articles from selected abstracts (records categorised as included or uncertain) will be obtained for further eligibility analysis. In case of uncertainty, a third researcher (JMP) will check the selection process. Full-text screening will be independently conducted by two reviewers (HMJSB and BSO) using a data collection standardised form with explicit inclusion and exclusion criteria (see online supplementary file 2). Discrepancies in eligibility will be resolved by two reviewers. In the event of an unsettled disagreement, the opinion of a senior epidemiologist will be required (ROG).

### Data collection process

Reviewers will fill out an explicit data collection form to organise study characteristics (country, setting, year of publication, study design and sample size); participants' characteristics (age, gender, body mass index, socioeconomic position and health status); and outcomes (factors which can be related to LSA in community-dwelling older adults). Reviewers will systematically use a standardised data abstraction form (see online supplementary file 2). HMJSB and BSO will independently extract the data. Unsettled disagreements will be resolved by a senior reviewer (ROG and JMP).

### Scientific quality assessment

Scientific quality of selected articles will be appraised using a standardised quality assessment tool tailored to best appraise the studies' methodological quality and bias, the Cochrane Collaboration's Risk of Bias Tool will be used for RCTs and the Strengthening the Reporting of Observational Studies in Epidemiology will be used for observational studies.

### Data synthesis

If meta-analyses are not possible, data will be narratively synthesised. As reported above, the results will be reported according to the PRISMA statement.<sup>18</sup> Evidence tables will be generated to descriptively summarise the included studies and results: (1) authors, (2) study design, (3) age group, (4) country, (5) objectives, (6) population, (7) recruitment, (8) life-space mobility score, (9) environmental and personal contextual aspects, (10) aspects related to body structure and function, and (11) scientific quality.

Finally, the ICF domains will be grouped and analysed by primary outcomes (environmental and personal contextual factors) and secondary outcomes (health conditions, body structure and function, activity and participation).

### Quantitative synthesis

Results from each study will be compiled in summary tables for descriptive comparisons of study findings. As primary outcomes we will evaluate LSA association with environmental and personal contextual aspects. We will aggregate study findings for each exposure in order to perform meta-analyses assessing overall magnitude of

the association with life-space mobility measurement. We recognise that there are variations for measuring each of our exposures, which will require us to stratify our findings to better account for study heterogeneity.

### Ethics and dissemination

No ethical issues are foreseen. The findings of this review will be submitted for publication in a peer-reviewed journal, and this paper is included in the lead author's doctoral dissertation.

### Patient and public involvement

Patients and or public were not involved.

## DISCUSSION

This systematic review will provide:

1. Knowledge about the factors associated with mobility in the life-space in order to identify the environmental aspect influences on the decline of mobility in old age.
2. A scientific basis sufficient to understand the influences for the decline of life-space mobility in ageing. Identifying contextual aspects associated with mobility deficit may help clinical research and preventive medical conduct.
3. Generating knowledge on environmental and personal contextual aspects can guide the government to insert public policies directed towards active ageing.
4. Disseminate the use of the LSA as a measurement tool for life-space mobility of older adults, including in primary care centres.

The contextual factors that may influence the decline in mobility among older adults can be a key point for possible intervention strategies, guidelines based on health education, or even policymaking to minimise the decline in mobility for older adults in the community. It is also hoped that the knowledge from this review will be used for exemplifying contextual aspects of the ICF and its impact on older populations, as well as for direct future clinical research in testing changes on contextual factors as a modifiable variable of health in life-space mobility.

We believe that knowledge about environmental and personal contextual aspects can guide the government to insert public policies directed at active ageing, seeing that from the findings of this study we will be able to identify which variables influence mobility decline in older adults. Thus, this could be used by public health managers to formulate strategies to minimise damage of contextual factors which affect mobility and thereby provide better life-space mobility in older adult communities.

Finally, this systematic review could contribute to disseminate the use of the LSA as a measurement tool of life-space mobility for older adults, including in primary care centres. The LSA is a tool that is associated with important aspects of senility such as falls,<sup>19</sup> frailty,<sup>20</sup> cognitive decline,<sup>8</sup> and is a mortality predictor,<sup>21</sup> as well as being a cheap and easy-to-use instrument, so it is possible that a primary care centre in health can use this tool to evaluate

older adults. LSA use may be used to alert professionals because it can identify an older adult with a low score, and thereby alert health professionals to an individual(s) who needs more attention and care in order to minimise the problems of senility.

**Contributors** HMJSB and BSO conceived and designed the protocol and drafted the manuscript. HMJSB, BSO, JMP and ROG participated in the critical revision of the manuscript for methodological and intellectual content. HMJSB and CSG carried out the search process. All authors approved the final version of the manuscript.

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