Associations between Motoric Cognitive Risk Syndrome, Physical and Psychological Health in Older Adults: a scoping review protocol

Associações entre Síndrome do Risco Cognitivo Motor, Saúde Física e Psicológica em Idosos: um protocolo de revisão de escopo

Asociaciones entre el Síndrome de Riesgo Cognitivo Motor, Salud Física y Psicológica en Adultos Mayores: un protocolo de revisión de alcance

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Abstract
Objective: To map existing literature on motoric cognitive risk syndrome and its associations with physical and psychological variables in community-dwelling older adults. Methodology: The indexed literature published in English, Portuguese and Spanish will be systematically searched on 8 databases (PUBMED, PUBMED PMC, EMBASE, BVS, COCHRANE, SCOPUS, WEB OF SCIENCE and AGELINE). Two authors will independently evaluate titles, abstracts and full-texts according to eligibility criteria. A customized data extraction form will be used to chart the data extracted from the studies. For consideration, studies must be in English, Portuguese or Spanish, involve studies with community-dwelling older adults (55 years old and over), men and/or women (mean age 60), gerontological literature that reports the syndrome in older adults, and observational, experimental and quantitative studies, besides reviews. Results: Results will be charted in a table and accompanied by a narrative summary.
Keywords: Aged; Cognition; Gait.

Resumo
Objetivo: Mapear a literatura existente sobre a síndrome do risco cognitivo motor e suas associações com variáveis de saúde física e psicológica em idosos comunitários. Metodologia: A literatura indexada publicada em inglês, português e espanhol será sistematicamente buscada em 8 bases de dados (PUBMED, PUBMED PMC, EMBASE, BVS, COCHRANE, SCOPUS, WEB OF SCIENCE e AGELINE). Dois autores avaliarão de forma independente os títulos, resumos e textos completos de acordo com critérios de elegibilidade. Uma tabela personalizada de extração de dados será utilizada para apresentar dados extraídos dos estudos. Serão considerados estudos em inglês, português e espanhol, que envolvem idosos comunitários (55 anos ou mais), homens e/ou mulheres (idade média de 60 anos), literatura gerontológica que envolve idosos diagnosticados com a síndrome e estudos observacionais, experimentais e quantitativos, além de revisões.
Palavras-chave: Idoso; Cognição; Marcha.

Resumen
Objetivo: Mapear la literatura existente sobre el síndrome de riesgo cognitivo motor y sus asociaciones con variables físicas y psicológicas en adultos mayores comunitarios. Metodología: La literatura indexada publicada en inglés, portugués y español será buscada sistemáticamente en 8 bases de datos (PUBMED, PUBMED PMC, EMBASE, BVS, COCHRANE, SCOPUS, WEB OF SCIENCE y AGELINE). Dos autores evaluarán de forma independiente los títulos, resúmenes y textos completos de acuerdo con los criterios de elegibilidad. Se utilizará un formulario de extracción de datos personalizado para graficar los datos excluidos de los estudios. Para consideración, los estudios deben estar en inglés, portugués o español, involucrar estudios con adultos mayores que viven en la comunidad (55 años y más), hombres y/o mujeres (edad promedio 60), literatura gerontológica que informa el síndrome en adultos mayores, e estudios observacionales, experimentales y cuantitativos, además de revisiones. Resultados: Los resultados

se registrarán en una tabla y se acompañarán de un resumen narrativo.
Palabras clave: Anciano; Cognición; Marcha.

1. Introduction

Age is the strongest known risk factor for dementia, it is not an inevitable consequence of biological ageing. As people get older, there is an expectation of an increase in cases of dementia syndromes (WHO, 2022), which can negatively impact the living conditions of older adults and lead to expensive public spending on health. Early identification of modifiable risk factors for cognitive impairment can help prevent new cases of dementia, contributing to a better quality of life for older people (Ayers and Verghese, 2014).

Motor impairments such as decreased gait speed are common with advancing age and may represent risk factors for the development of predementia syndromes such as mild cognitive impairment and contribute to rapid cognitive decline (Mielke et al., 2013). Additionally, the concomitant existence of motor and cognitive impairment may be an important indicator of undiagnosed brain diseases and represents a risk for the development of dementia in the future (Holtzer et al., 2006). It might be valuable to estimate the population risk at risk of cognitive decline and dementia as soon as possible to address the situation (Marquez et al., 2021).

Motoric cognitive risk syndrome (MCR) is a predementia syndrome (Verghese et al., 2013, 2014), characterized by the presence of reduced gait speed and subjective cognitive complaints. Four criteria are relevant to diagnosis: (1) cognitive complaints verified by standardized questionnaires, (2) reduced gait speed with one standard deviation or more below age and mean gait appropriate for sex. (3) ability to walk and (4) absence of dementia (Verghese et al., 2013,2014). With the purpose of identifying nondemented older people likely to develop dementia (Alzheimer's and other types) in the future, there is a need to improve accessibility and effectiveness in identifying those with potential to develop future dementias. The diagnosis is simple, efficient, and cost-free, being feasible even for developing countries, since diagnostic criteria do not require expensive laboratory tests and sophisticated imaging (Verghese et al., 2013, 2014). Cognitive tested are not required to identify the syndrome (Meiner et al., 2020).

Scarce literature found that MCR syndrome is a predictor of mild cognitive impairment (Verghese et al., 2014) and a risk factor for dementia, falls, disabilities, frailty, and mortality (Chhetri et al. 2017; Sathyan et al., 2019; Beauchet et al., 2019). There are some associations with physical health variables found in literature, including diabetes, cerebrovascular diseases (Beauchet et al., 2020), polypharmacy (George & Verghese, 2020) and falls (Shim et al., 2020). Very little is known about the predictors of the syndrome. One study found that a drop in gait speed (Sekhon et al., 2019) and subjective cognitive complaints are predictors of MCR syndrome.

Studies involving psychological variables and their associations with NCR syndrome are even scarcer (Sutin et al., 2020). Literature has found associations between MCR syndrome, anxiety disorders and depression (Sekhon et al., 2019). Other studies have shown association of MCR syndrome with personality traits and psychological well-being. Studies have shown positive associations with neuroticism and openness to experience, and negative association of MCR syndrome with purpose in life (Sutin et al., 2020. People with high levels of purpose were 33% less likely to develop the MCR syndrome.

Recently, a systematic review and meta-analysis verified the association of MCR syndrome with cardiovascular and no cardiovascular factors. The results showed that MCR syndrome was significantly associated with diabetes, hypertension, stroke, obesity, smoking, low education, sedentary lifestyle, and depression. Moreover, MCR syndrome significantly increased the risk of incident dementia, cognitive impairment, falls, and mortality (Iqbal et al., 2022). The aims of the scoping review are to map existing literature on MCR syndrome and its associations with physical and psychological health variables in community-dwelling older adults.

2. Methodology

The planned scoping review will be conducted according to the framework devised by Arksey and O'Malley (2005) and subsequently developed by Levac et al. (2010). The scoping review methods will comprise the following key stages: (1) identification of review questions; (2) identification of relevant studies; (3) selection of studies; (4) mapping/charting of data; and (5) comparison, summary and reporting of results (Arksey & O'Malley, 2005) (Peters et al, 2015). The review will be conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews (PRISMA-ScR) and previously published recommendations about scoping review methodology (Tricco et al., 2018). As recommended, this protocol was preregistered on the Open Science Framework (osf.io/t7mfs). The main steps adopted for the scoping review are summarized in the following subsections.

Stage 1. Identification of Review Questions

The following broad review question will guide the strategy for the systematic Search of literature: "What are the health variables associated with Motoric Cognitive Risk syndrome in older adults?" This question should provide a sufficiently comprehensive review of relevant available literature whereas should allow the addition or refinement of questions guiding the Search during the course of study, as needed. During the preliminary exploratory review, only one secondary question was identified for guiding subsequent stages of the scoping review and complementing the broader question defined above. This question shall include, but not be limited to: "What are the physical and psychological variables associated with MCR syndrome in community-dwelling older adults?"

Stage 2: Identification of Relevant Studies

The search strategy ((("motoric cognitive risk") OR ("Motoric Cognitive Risk Syndrome")) OR ("Motoric cognitive risk syndrome (MCR) ") will be applied in the following databases: PUBMED, PUBMED PMC, EMBASE, BVS, COCHRANE, SCOPUS, WEB OF SCIENCE and AGELINE with the support of a specialized librarian.

The population, concept, and context (PCC) framework recommended by Joanna Briggs Institute for scoping reviews will be used in this review to determine the research question and eligibility criteria. Studies will be selected according to inclusion criteria. This review will consider studies that include community-dwelling older adults (55 years old or over), men and/or women (mean age 60 years at least) [participants]. The review will consider gerontological literature that reports motoric risk cognitive syndrome (MCR syndrome) in older adults [concept]. The review will consider published studies involving community-dwelling older adults [context]. The scoping review will consider all relevant studies published in English, Portuguese or Spanish. The search will include empirical studies based on quantitative data, cross-sectional or longitudinal studies, published during the period spanning from September 2021 to January 2022. Protocols, book chapters and guidelines will not be included in the scoping review. Gray literature will not be included as well.

Stage 3: Selection of Studies

Two authors will select studies considering the inclusion criteria and using Rayyan (https://rayyan.qcri.org), a web and mobile app for systematic reviews, to analyze titles and abstracts of the articles. If they disagree, a third author will be consulted. Selected studies will be read in full by two authors, and discrepancies will be solved by consensus. The date of the studies that meet the eligibility criteria will be imported into the Endnote Web library database, and the reference lists of the selected studies will be reviewed. The inclusion criteria for the present review follows the PCC framework, which is recommended to guide scoping reviews. The following studies will be considered:

• studies of community-dwelling older adults (55 years old and over), men and/or women (mean age 60 years at least) [participants];

• gerontological literature that reports MCR syndrome in older adults [context];

• published studies conducted in the community as long as they had included older adults [concept].

• observational studies, experimental studies, quantitative studies, and reviews will be considered in the present scoping review.

Papers will be excluded if they are not fully published in the selected languages described above. Qualitative studies will be also excluded from this review.

Stage 4: Mapping/Charting of Data

Relevant data for this review will be extracted from the included studies by two independent reviewers using methods recommended by Peters et al (2015). Data extraction will include author(s), year and country of publication, article title, type of study, sample size, median age, gait and cognition assessments, independent and dependent variables and main results.

Stage 5: Comparing, Summarizing, and Reporting of Results

The review decision process will be presented in a flowchart, including search results, removal of duplicate citations, phases of study selection (title/abstract and full text), reasons for excluding papers after full text screening, and the final number of included studies. To illustrate this process, a PRISMA flow diagram will be used. The results will be presented in a tabular format, accompanied by a narrative summary related to the objective of the scoping review. A data presentation table will be developed based on the extracted data, which will be grouped together according to study type.

Ethical Approval

Since the scoping review methodology aims to synthesize information from available publications, this study does not require ethical approval.

3. Partial Considerations

Relevance and Dissemination

The scoping review will have the potential to inform health care researchers about available evidence on motoric cognitive risk syndrome in older adults, mapping associations with objective and subjective health. The outcomes might help health care practitioners on their daily care to address predementia cases and may contribute to formulate effective public health policies. The complete scoping review will be disseminated through presentations at aging conferences and publication in a peer-reviewed international journal.

Acknowledgements

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