Assessment of communication in the Diagnosis of Mild Cognitive Impairment: an integrative research review

A comunicação no diagnóstico de Comprometimento Cognitivo Leve: revisão integrativa

La comunicación en el diagnóstico de Comprometimiento Cognitivo Leve: revisión integrativa

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Abstract

Objective: To review methods for assessing communication in the diagnosis of mild cognitive impairment. **Methods:** This integrative research review was conducted using the PubMed, SciELO, and Web of Science databases, with the following medical subject heading (MeSH) terms: mild cognitive impairment, diagnosis, and communication. No date or language restrictions were included. Original articles describing criteria and instruments used for the diagnosis of mild cognitive impairment were selected. Articles concerning neurological diseases and those directed to just one of the types of this commitment were excluded. **Results:** A total of 5,217 articles matched the search terms: six from SciELO,

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830 from PubMed, and 4,378 from Web of Science. Using the criteria described above, we selected 11 articles for this review. **Conclusions:** Diverse methods are used in the diagnosis of mild cognitive impairment. Diagnostic tests predominantly evaluate memory but do not assess other cognitive functions. In particular, no examples of tests exclusively assessing communication were found.

Keywords: *Mild cognitive impairment; Diagnosis; Communication.*

Resumo

Objetivo: Apresentar as evidências científicas a cerca da avaliação da comunicação no diagnóstico do Comprometimento Cognitivo Leve. **Métodos:** Trata-se de uma pesquisa integrativa da literatura, tendo sido realizada a partir das bases de dados PubMed, Scielo e Web of Science, com combinação dos seguintes descritores: Mild cognitive impairment, diagnosis e communication, todos cadastrados no MeSH. Não houve restrições de tempo e idioma. Foram selecionados os artigos originais que apresentassem critérios e instrumentos utilizados para o diagnóstico de Comprometimento Cognitivo Leve, sendo excluídos artigos associados diretamente a doenças neurológicas e os que se direcionassem apenas a um dos tipos desse comprometimento. **Resultados:** Foram encontrados 5214 artigos a partir da busca de descritores, sendo seis na Scielo, 830 na Pubmed, 4378 na Web of Science. A partir dos critérios de inclusão e de exclusão pré-estabelecidos, foram selecionados 11 artigos para esta revisão. **Conclusões:** Existe grande diversidade de métodos de investigação utilizados para o diagnóstico do Comprometimento Cognitivo Leve. Registra-se, no entanto, predomínio de testes que avaliam a memória, em detrimento a outras funções cognitivas, mais especificamente a comunicação. Não foi encontrado teste direcionado exclusivamente para essa função..

Palavras-chave:Comprometimento cognitivo leve; Diagnóstico; Comunicação.

Resumen

Objetivo: *Presentar las evidencias científicas sobre la evaluación de la comunicación en el diagnóstico del Comprometimiento Cognitivo Leve.* ***Métodos:*** *Se trata de una investigación integrativa de la literatura que fue realizada a partir de las bases de datos PubMed, Scielo y Web of Science, con la combinación de los siguientes descriptores: Mild cognitive impairment, diagnosis, e communication todos registrados en el MeSH. No hubo restricciones de tiempo ni idioma.Fueron seleccionados los artículos originales que presentaran criterios e instrumentos utilizados para el diagnóstico del Comprometimiento Cognitivo Leve, y fueron excluidos los artículos quelo asociaban directamente a enfermedades neurológicas e los que se direccionaran sólo a uno de los tipos de ese comprometimiento.* ***Resultados:****Fueron encontrados 5214 artículos a partir de la búsqueda de descriptores, 6 en Scielo, 830 en la Pubmed y 4378 en la Web of Science. Partiendo de los criterios de inclusión y de exclusión preestablecidos se seleccionaron 11 artículos para esta revisión.* ***Conclusiones:*** *Existe una gran diversidad de métodos de investigación utilizados para el diagnóstico del Comprometimiento Cognitivo Leve. Sin embargo, se registra el*

Introduction

Mild cognitive impairment (MCI) is a transitional state between normal cognitive aging and disease in which elderly patients show greater cognitive decline than expected for their age. Although MCI symptoms do not meet the criteria for Alzheimer's disease (AD), patients with MCI have an increased risk of developing AD[1]. MCI in the elderly may remain stable; however, over half of MCI patients develop dementia over a period of five years. Petersen (2011) reported that healthy elderly people have a 1-2% risk of developing AD; this ratio increases to 5-10% in patients with MCI[2].

The diagnostic criteria for MCI include failure to meet DSM-IV and/or ICD-10 criteria for dementia, evidence of cognitive decline as evaluated by cognitive tasks, self-report of cognitive decline and preservation of functional independence with only mild impairments in the ability to perform complex functional tasks[3]. An evaluation of these

criteria concluded that those criteria that indicate a transition to a state of dementia are the most useful[4].

MCI is a heterogeneous syndrome with multiple subtypes, and may include signs of other types of dementia in addition to AD[2].The type of cognitive loss varies among patients; some may first experience impairments in communication, whereas others show declines in executive function or learning[4]. Approximately one-fifth of the population over 65 years of age experiences communication difficulties[5].It is noteworthy that value attributed to communication ability by healthcare professionals has not been explored in the literature, as communication is critical to the care of older people with respect to their quality of life and the satisfaction of their caregivers and families[6].

The relevance of studying current problems facing elderly patients justifies the need to evaluate the tests and instruments used to assess communication abilities in MCI patients, and to convey this information to the healthcare community. Thus, this study aims to identify tools used to evaluate communication and functional abilities in elderly people with MCI.

Materials and methods

The development of this review included the following steps: definition of the research question, selection of electronic databases, establishment of inclusion and exclusion criteria, pre-selection of articles, evaluation of pre-selected studies, and final selection of studies for review, interpretation of results, and drafting of the article text.

Our primary research question was: How is communication evaluated in the diagnosis of MCI? Study selection was carried out from February to March 2014. Searches were performed in the SciELO, PubMed, and Web of Science databases. These databases were chosen based on their international publication collections, reliable information, and frequent use in academic settings.

Medical subject headings (MeSH) were used as keywords to search the scientific literature, without language restrictions, in the following combinations: “diagnosis” and “mild cognitive impairment,” “communication” and “mild cognitive impairment,” and “diagnosis” and “mild cognitive impairment” and “communication.” In addition, references relevant to the subject matter of this review that were cited by the selected studies were consulted.

Original articles that addressed the criteria and tools used in the diagnosis of MCI were selected. We excluded case studies, editorials, validation studies, systematic or integrative literature reviews, theses or dissertations, papers presented at scientific conferences, clinical trial pilot studies, comparative studies, experimental research, and articles that described neuroimaging or a direct association of MCI with neurological diseases such as Parkinson’s disease and stroke. In addition, articles that described a single subtype of MCI, such as amnestic MCI or MCI related to a specific protein or biomarker, were excluded .Article selection was performed independently by two researchers who were familiar with the exclusion and inclusion criteria. Selected articles were then discussed.

The following features of the selected articles are presented in the results: author, year, country, subject characteristics, diagnostic instruments used, and features and approach to the assessment of human communication.

Results

A total of 5,217 articles were initially identified using the search descriptors in the selected databases. Of these, 830 were found using PubMed, 4,381 were found using Web of Science, and six were found using SciELO .Based on the article titles, 757 articles from PubMed, 4,324 articles from Web of Science, and one article from SciELO were excluded. Of the remaining 135, 106 articles were excluded based on the abstract: 53 from PubMed, 49 from Web of Science, and four from SciELO. Of the remaining 29 articles, four duplicate articles were excluded. After a complete reading of the remaining 25 articles, 14 were excluded. 11 articles were selected for the present study (Figure 1).

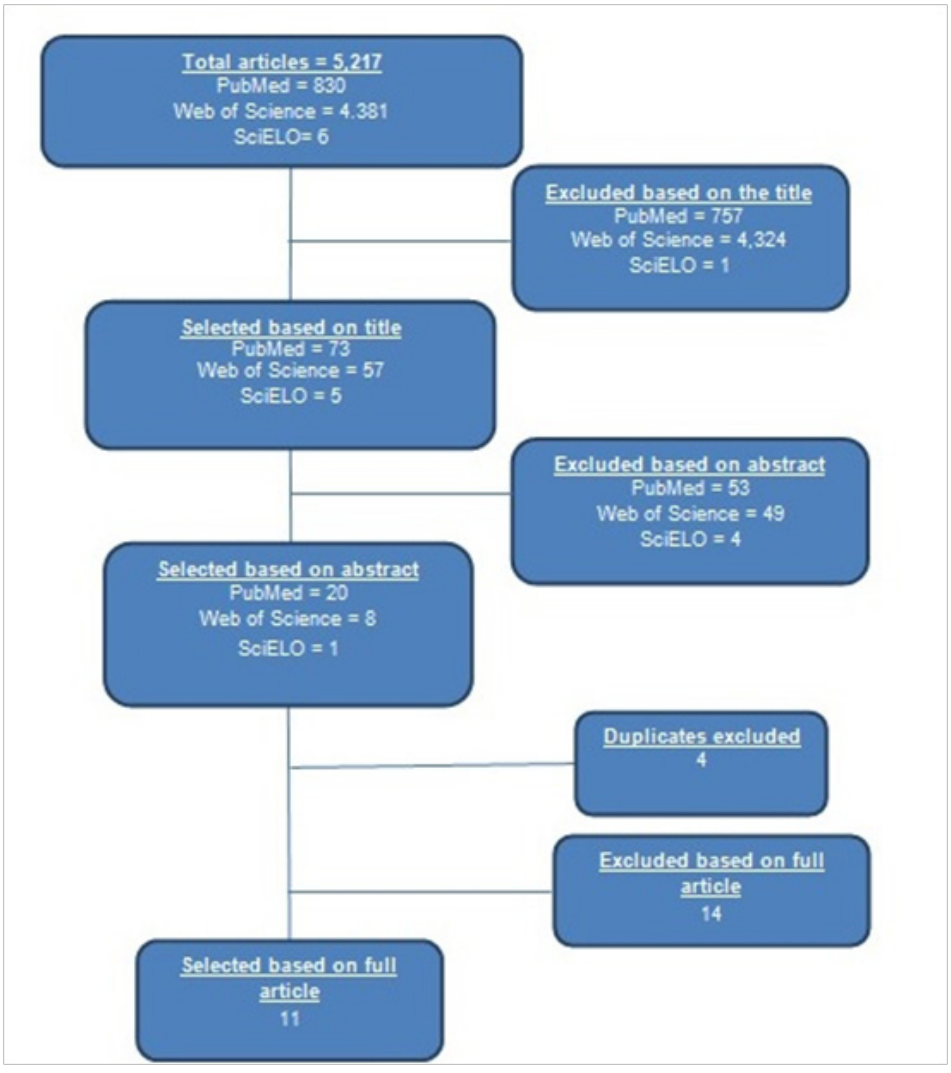

Figure 1 – A FLOW CHART THAT ILLUSTRATES THE ARTICLE SELECTION PROCESS. THE NUMBER OF ARTICLES THAT WERE SELECTED OR EXCLUDED AFTER THE APPLICATION OF EACH INCLUSION AND EXCLUSION CRITERIA ARE INDICATED.

The articles selected for this study originated from nine different countries. Among these, six developed five developing. Of the selected articles, one per year was published in 2002, 2006, 2008, 2009, and 2011. In 2012 and 2013, there was an increase in the number of articles published, with three of the selected studies published each year.

Several diagnostic tools were identified for the evaluation of elderly patients with MCI. The Mini-Mental State Examination (MMSE), a cognitive assessment, was used in nine of the selected studies. One section of this instrument briefly addresses language capabilities, including recognition, object naming, and writing and comprehension of simple commands. Despite the assessment of communication ability in the MMSE, two other relevant tests were identified: the Verbal Fluency Test (VFT), which was used in two studies, and the Montreal Cognitive Assessment (MoCA), which was used in one study. These data are presented in Table 1.

Nº	AUTHOR, YEAR	COUNTRY	SAMPLE	ASSESSMENT INSTRUMENTS	COMMUNICATION ADDRESSED?
01	MORETTI et al, 2013	Italy	6,921 elderly subjects 52.9% female	MMSE	Yes
02	SIRÁLY et al, 2013	Hungary	63 subjects 14 with MCI	PAL, Petersen criteria, MMSE	Yes
03	O`CAOIMH et al, 2013	Ireland	965 elderly subjects 57% female 154 with MCI	MMSE, SMMSE	Yes
04	GUO et al, 2012	China	796 elderly subjects 311 with MCI	Petersen criteria, CMMSE, MES, neuropsychological battery including AVLT, CFT, AFT, TMT-A, TMT-B, SCWT, CDT	Yes
05	LI J. et al, 2012	China	Elderly subjects 60-95 years of age	MMSE, MoCA	Yes
06	LENEHAN et al, 2012	Australia	139 elderly subjects 60-90 years of age 83 with MCI .	Petersen criteria, neuropsychological battery including CFT, TMT-A and -B, SCWT, DRS	NO
07	EHREKE, 2011	Germany	428 elderly subjects	CDT	NO
08	LADEIRA et al, 2009	Brazil	247 elderly subjects 73% female 83 with MCI	CAMDEX, MMSE, VFT, IQCODE	yes
09	ABREU et al, 2008	Brazil	191 elderly subjects 65 with MCI	MMSE, neuropsychological battery, IQCODE	yes
10	ALLADI et al, 2006	England	124 subjects 72 with MCI	Petersen criteria, MMSE, CFT, TMT-A and -B, VFT, PAL	yes
11	GELIN et al, 2002	EUA	351 elderly subjects 40.1% female .	MMSE, CCSE	yes

Table 1 - A summary of the instruments used for the diagnosis of mild cognitive impairment (MCI) in the included studies.

MMSE: Mini-Mental State Examination; PAL: Process Assessment of the Learner; CCSE: Cognitive Capacity Screening Examination; VFT: Verbal Fluency Test; CFT: Rey Osterrieth Complex Figure Test; TMT-A and -B: Trail Making Test, parts A and B; IQCODE: Informant Questionnaire on Cognitive Decline in the Elderly; CMMSE: Mini-Mental State Examination, Chinese version; MES: Memory and Executive Screening; AVLT: Auditory Verbal Learning Test; MoCA: Montreal Cognitive Assessment; SCWT: Stroop Color and Word Test; DRS: Dementia Rating Scale; AFT: Verbal Fluency Test - animals; CAMDEX: Cambridge Mental Disorders of the Elderly Examination.

Discussão

The diversity observed in the selected studies precluded a statistical meta-analysis. The heterogeneity could be observed regarding the absence of randomization criteria and diversification of the variables considered in each participating product. Over the past four decades, the growth of the elderly population has been particularly significant in developing countries. Consistent with this trend, two developing countries, Brazil and China, each produced two of the articles selected in this study.

In the changing health profile of the aging population, complications associated with chronic degenerative diseases are increasingly common[7]. Diseases that impair cognition have been increasingly studied to understand the distinction between senescence and senility. Senescence is defined by normal changes that are inherent to the aging process, whereas senility refers to the most common morbid states in elderly people[8].

Among clinical conditions associated with cognitive decline, MCI has been the most extensively studied, particularly during the past decade3. This increase in MCI-related research is reflected in the present study, with ten of the 11 selected articles having been published within this period. Importantly, seven of the 11 texts selected for analysis have been published within the past three years, demonstrating the increasing interest in this issue.

There are few studies in the literature describing sex differences among MCI patients[3,9]. A study conducted in Minnesota, in the northern United States, found that the men obtained the commitment incidence greater than the women, regardless of MCI subtype[10]. The subjects included in this study were predominantly female, which may reflect the fact that, traditionally, the number of long-lived women is higher than that of men in the same range[11].

Over 50% of the selected studies used the Petersen criteria (2001) for MCI diagnosis: self-report of memory loss confirmed, if possible, by a close informant; symptoms not meeting the criteria for dementia; objective measurement of impairments in cognitive functions; preserved independence with minimal functional impairment; and cognitive decline confirmed by diagnostic tests. Related in one of the studies, the use of self-reported memory impairments as a diagnostic criterion in elderly patients is unreliable, as false positives are common and can reduce the sensitivity and specificity of the diagnosis. Accordingly, other studies show that self-reports do not necessarily correspond to objective measurements of functional abilities, and commitment alone does not predict the development of dementia[12,13.] However, the investigation of subjective complaints is fundamental in studies where the use of psychometric tests is limited[14].

There have been few studies regarding the psychometric parameters (reliability, validity, and standardization) of neuropsychological tests used in the Brazilian geriatric population for the identification of the cognitive process[15].

Elderly patients with mild cognitive decline may gradually lose their occupational capabilities and experience negative effects on their social relationships. Assessment of cognitive function in these individuals may allow for early detection of MCI, which would enable both patients and their families to take steps to either prevent or delay the social and emotional losses associated with the development of dementia[16].

Approximately 80% of the selected articles used the MMSE to assess cognitive function. This test, which was developed by Folstein in 1975, is one of the most widely used and studied tests for cognitive function worldwide. The psychometric properties of the original version, as well as various translations and adaptations, have been extensively assessed. The MMSE was translated and validated for use in Brazilian populations by Bertolucci in 1994[17]. By being highly used, it is a constant reason for comparative studies[17,18]. Five of the articles selected for this review compared this instrument with other tests such as the Paired Associates Learning test (PAL), Memory and Executive Screening (MES), the Montreal Cognitive Assessment (MoCA), and the Cognitive Capacity Screening Examination (CCSE).Research using the MMSE in various contexts suggests that this instrument may be sufficient for the identification of cognitive deficits[19]. In agreement with the above study, it was showed that the use of the MMSE in combination with other tests, such as the Informant Questionnaire on Cognitive Decline in theElderly (IQCODE), increased the accuracy of MCI diagnosis[20].

It should be noted that some aspect of communication was evaluated in nine of the 11 studies included in this review. However, two of the 11

articles did not assess communication ability, demonstrating that this feature is sometimes disregarded in the diagnosis of MCI. Several common diagnostic instruments, such as the MMSE, MoCA, and VFT, include language tasks such as object naming, verbal fluency, and comprehension of simple commands. However, there are shortcomings in the assessment of some communication aspects that should be addressed, such as understanding the meaning of double expressions [20]. In addition, despite the importance of communication in social relationships, interactions with the environment, and satisfactory interactions with healthcare professionals, we have found that the value attributed to communication by healthcare professionals has not been extensively explored[21].

Communication impairment can be an indicator of cognitive decline, and therefore it is a characteristic that can be evaluated during the history of the elderly. A reliable instrument that has been validated in Brazil and used for this purpose is the Functional Assessment of Communication Skills for Adults (FACS)[22]. Overall, the results of this integrative review suggest a need to assess communication skills in individuals with MCI, given that this function is critical to social interactions in the elderly.

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Conclusions

Several important aspects are addressed in this integrative review. First, this study highlights the difficulty of standardizing evaluation methods, as suggested by the diversity of research methods used in the diagnosis of MCI. Secondly, we found a prevalence of tests assessing memory with less focus on other cognitive functions. Finally, the absence of a specific instrument for communication assessment is notable, given that the loss of communication ability can lead to social isolation and further functional decline.

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