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Alternative perspectives on Mild Cognitive Impairment (MCI): Broadening the definition of MCI.

Perspectivas alternativas sobre el deterioro cognitivo leve (DCL): Ampliando la definición del DCL.

Moises Gaviria¹, Erin Cullnan²

SUMMARY

Mild cognitive impairment (MCI) is a relatively newly described phenomenon representing a mild deficit on the continuum between normal aging and dementia. Although MCI is the source of much interest and research in the fields of neuroscience and medicine, its definition, prevalence, and criteria for diagnosis has yet to become standardized and is the subject of much controversy. While there is some consensus among American and European researchers about the construct of MCI, others argue that these researchers focus too much on MCI as a preclinical state of Alzheimer's disease (Ad) and thus is too narrow. MCI must also be examined in the context of each individual patient, taking into account each person's unique needs and the degree to which his or her life is affected by the cognitive impairment in question. As the upcoming DSM-5 criteria are still being decided, it is a particularly opportune time to focus on alternative perspectives and definitions of MCI to ensure the best clinical definition possible can be determined.

KEYWORDS: Mild Cognitive Impairment, classification.

RESUMEN

El deterioro cognitivo leve (DCL) es un fenómeno descrito hace relativamente poco y que implica un déficit leve en el espectro continuo que existe entre el envejecimiento normal y la demencia. A pesar de que el DCL genera gran interés en la investigación desde las neurociencias y la medicina, su definición, prevalencia y criterios diagnósticos no han sido aún estandarizados, siendo objeto de mucha controversia. Existe cierto consenso entre investigadores estadounidenses y europeos sobre el constructo del DCL, pero otros argumentan que estos investigadores tienden a considerar el DCL como un estadio preclínico de la enfermedad de Alzheimer, estrechando, por tanto, su visión. La investigación del DCL debe realizarse según el contexto de cada paciente individual, tomando en consideración las necesidades particulares de la persona y el grado en el que su vida se ve afectada por el deterioro cognitivo. Como los criterios del DSM-5 están aún decidiéndose, este es un momento oportuno para concentrarnos en las perspectivas y definiciones alternativas del DCL para determinar la mejor definición clínica posible.

PALABRAS CLAVE: Deterioro cognitivo leve, envejecimiento.

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INTRODUCTION

Mild cognitive impairment (MCI) is a relatively newly described phenomenon representing a mild deficit on the continuum between normal aging and dementia. Although MCI is the source of much interest and research in the fields of neuroscience and medicine, its definition, prevalence, and criteria for diagnosis has yet to become standardized and is the subject of much controversy. Many MCI researchers have agreed that MCI encompasses non-demented persons with measurable cognitive deficits, but how those deficits are measured and classified are under debate (1). Teams of researchers are also examining the role of genetics, biomarkers and neuroimaging to determine whether these tools can help with the classification of MCI and whether cognitive deficits could be predicted, and hopefully treated, before the progression to dementia occurs (2).

While there is some consensus among American and European researchers about the construct of MCI, others argue that these researchers focus too much on MCI as a preclinical state of Alzheimer's disease (Ad) and thus is defined too narrowly. Some scientists suggest that MCI must be examined as part of a larger clinical entity, which the current definitions of MCI are just one small part. It is also argued that MCI must be examined in the context of each individual patient, taking into account each person's unique needs and the degree to which his or her life is affected by the cognitive impairment in question. As the upcoming DSM-5 criteria are still being decided, it is a particularly opportune time to focus on alternative

perspectives and definitions of MCI to ensure the best clinical definition possible can be determined.

MCI: A PROPOSED CONSENSUS

In 2003, a symposium was held in Sweden to attempt to integrate clinical perspectives on MCI. From that meeting, three criteria for MCI were recommended to guide future research: (i) the person is neither normal nor demented; (ii) there is evidence of cognitive deterioration shown by either objectively measured decline over time and/or subjective report of decline by self and/or informant in conjunction with objective cognitive deficits; and (iii) activities of daily living are preserved and complex instrumental functions are either intact or minimally impaired (1).

The group recognized that there might be multiple etiologies for MCI such as ischemia, trauma, metabolic insults and psychiatric illness in addition to conditions like Alzheimer's disease or Parkinson's disease. It was also understood that some persons with MCI may progress towards dementia, while other may remain stable or even clinically improve. Further research was needed regarding what determines normal rates of clinical decline for a specific age group (1). From that meeting, a preliminary cognitive framework was determined that helped shape the direction of future research about MCI. In it, MCI was arrived at when a cognitive complaint was considered not normal for age, the patient was not demented, there was a cognitive decline with essentially normal functional activities. When the question of memory impairment

Table 1. DSM-5 Proposed Mild Cognitive Disorder Subtypes

a.	Mild Cognitive Disorder Associated with Alzheimer's Disease
b.	Mild Cognitive Disorder Associated with Vascular Disease
c.	Mild Cognitive Disorder Associated with Fronto-Temporal Lobar Degeneration
d.	Mild Cognitive Disorder Associated with Traumatic Brain Injury
e.	Mild Cognitive Disorder Associated with Lewy Body Disease
f.	Mild Cognitive Disorder Associated with Parkinson's Disease
g.	Mild Cognitive Disorder Associated with HIV Infection
h.	Mild Cognitive Disorder Associated with Substance Use
i.	Mild Cognitive Disorder Associated with Huntington's Disease
j.	Mild Cognitive Disorder Associated with Prion Disease
k.	Other Specified Mild Neurocognitive Disorder

From American Psychiatric Association DSM-5 Development: www.dsm5.org/proposedrevision/pages/neurocognitivedisorders.aspx

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was raised, it was important to distinguish if there was only memory impairment or if other domains were also impaired. The construct of amnesic and non-amnesic subtypes of MCI and single versus multiple domains of impairment is still used by many researchers today.

PRELIMINARY DEFINITIONS OF THE DSM-5

Many researchers are interested to learn what the definition of MCI will be in the DSM-5 as these criteria are used to diagnose clinical disease states and are instrumental in guiding future research. Although the criteria are still being finalized, there are some preliminary changes and recommendations that are reported. While the DSM-IV did not take into account the degree of cognitive impairment in its classification of neurocognitive disorders, the proposed criteria for DSM-5 separates neurocognitive disorders into delirium, and mild and major neurocognitive disorders, which are separated by severity (3). Within the mild neurocognitive impairment classification, the diagnoses are separated by their proposed etiology, such as mild cognitive disorder associated with Alzheimer's disease or mild cognitive disorder associated with HIV infection, etc. See table 1 for a complete list of proposed classifications.

Within the broader category of mild cognitive disorder, patients will be identified by evidence of a minor decline from a previous level of performance in one or more domains based on the concerns of the patient/informant/clinician and a decline on formal testing, typically 1 to 2 standard deviations below age-appropriate norms. To be classified as mild, deficits must not interfere with independence or activities of daily living, but may require that greater effort or compensatory strategies be used to complete these tasks. These deficits may not be attributed to delirium or another Axis I disorder (3). It has not yet been suggested which types of formal testing should be employed or what constitutes an age-appropriate norm for comparison of patient deficits.

Although these are still preliminary criteria, they are, of course, a subject of wild academic debate. Some researchers have suggested that there is no description of the course of cognitive deficits, i.e. whether the course is progressive, stable or improving over time. Others have criticized that the DSM-5 has provided no concrete definition of dementia with which to thus define MCI. It has also been suggested that classifying a disorder by presumed etiology is premature in most areas of psychiatry, especially when ultimately little is known about the root causes of the disorder (4). Finally, it is unclear whether

instruments used to assess cognitive performance, which were developed for middle class populations in the United States are valid in developing countries, causing researchers to question how generalizable the new DSM-5 definitions of MCI will be to non-Western populations (4).

ALTERNATIVE PERSPECTIVES ON MCI: A BROADER PERSPECTIVE

R. L. Ventura and other scientists in Latin American countries have expressed disagreement with the current suggested definition of MCI. While they agree that MCI is a complex clinical entity and finding high-risk individuals is important, they believe that the current classifications are too restrictive and should be broadened to include other types of cognitive impairment. The perspective offered by Ventura et al suggests criteria based on three dimensions: (i) the evolution and course of illness, (ii) the subtype, and (iii) the intensity of repercussions on activities of daily living (5).

By including criteria regarding the course of the illness, it becomes more evident that not all persons with MCI universally progress to a demented state. Ventura suggests two classes within this category: Class I includes all forms of cognitive impairment that are reversible and Class II defines all forms of irreversible impairment. These classifications demonstrate that the reversibility of the cognitive deficits is important regardless of its etiology (5).

In regards to the particular subtype of MCI, Ventura suggests three different classes. Class A consists of those persons whose deficits do not improve with time and have lasting sequelae. Class B defines those persons who have deficits, but continue without change in the future, neither worsening, nor improving in cognitive function. Class C consists of the unfortunate persons who have progressive deterioration in cognitive function (5). Again, this classification demonstrates that regardless of the etiology, the clinical course must be considered when diagnosing persons with MCI. It is currently unclear how to predict which patients will progress to dementia and which will remain stable or even recover, but it is possible that these different subtypes will prove to be important in patient follow-up and even treatment modalities in the future.

Finally, Ventura suggests that the intensity and repercussions on a person's activities of daily living must be considered. Cognitive deficits may affect only one area such as executive function, language, apraxia, agnosia, or lack of attention. In contrast,

deficits may also affect multiple areas of cognitive function (5). Clearly deficits spanning multiple areas of cognition affect broader facets of a person's life and may necessitate greater accommodation to maintain normal daily functioning.

Ultimately, many scientists argue that any cognitive deficits must be evaluated within a person's individual educational, occupational and cultural contexts. For example, the same degree of aphasia may be experienced differently in a rural farm worker versus a language professor. Prosopagnosia would be more detrimental in a police officer than in a stay-at-home-mom (5). In order to fully assess a person's functional status and evaluate their activities of daily living, we must ensure we are going beyond using structured questionnaires designed to evaluate middle class, educated populations and include measures designed to assess a person's needs in their own day-to-day environment. In this way, deficits that truly impact a person's way of life will be illuminated, allowing the patient to better adopt coping strategies to improve daily functioning and hopefully, guide more specialized plans for treatment in the future.

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