Our Mission: Helping to prepare Iowa’s health practitioners to care for our growing population of elders. E-NEWS is one of our methods of teaching through technology.

Each month, E-NEWS delivers abstracts from current multidisciplinary healthcare journal articles related to a specific geriatric topic. This month’s E-NEWS focuses on MILD COGNITIVE IMPAIRMENT.

MILD COGNITIVE IMPAIRMENT

In this issue of the E-NEWS, you will find abstracts for:

- A study that examines patterns of mild cognitive impairment after treatment of depression in older adults.
- A study that researches the use of an algorithm for identifying mild cognitive impairment.
- An article that discusses mild cognitive impairment as a subset of minor neurocognitive disorder.
- An article that examines instrumental activities of daily living in mild cognitive impairment.
- A study that seeks to develop a screening tool for mild cognitive impairment.
- A study that explores subgroups of mild cognitive impairment based on cognitive, neuropsychiatric, and functional features.
- An article that addresses caring for older adults with mild cognitive impairment.
- A study that evaluates informant-reported cognitive symptoms that predict amnestic mild cognitive impairment.
- An article that reviews cognition-based interventions for healthy older adults and older adults with mild cognitive impairment.
- An article that describes a possible continuum from late-life depression, to mild cognitive impairment, to dementia.
- A study that analyzes the effect of a multicomponent exercise program on memory function in older adults with mild cognitive impairment.
- A study that investigates functional deficits among older adults with mild cognitive impairment.

OBJECTIVES: Late-life depression (LLD) is associated with persistent cognitive impairment in a subset of individuals. The purpose of this study was to 1) examine the frequency and characteristics of cognitive diagnoses (Mild Cognitive Impairment [MCI], dementia) among remitted elderly depressed subjects and 2) to compare the prevalence rate and correlates of cognitive diagnoses with those of comparison subjects.

DESIGN: Cross-sectional. SETTING: Outpatient geriatric mental health clinic. PARTICIPANTS: The authors examined cognitive diagnoses among 109 subjects age 65 and older, after depression treatment response and 65 never-depressed, age- and education-equated comparison subjects. MEASUREMENTS: Cognitive diagnoses were independently established by the University of Pittsburgh's Alzheimer's Disease Research Center. Bivariate and multivariate analyses were conducted to examine the role of specific risk factors for cognitive diagnosis among depressed subjects.

RESULTS: Relative to comparison subjects, nearly twice as many depressed subjects were diagnosed with MCI or dementia (48% versus 28%). Of the 109 depressed subjects, 38% were diagnosed with MCI (63% amnestic, 37% nonamnestic). The majority of amnestic MCI subjects (85%) had the multiple domain subtype. Age, but not age of onset or lifetime depression duration, predicted cognitive diagnosis. CONCLUSIONS: Despite adequate depression treatment response, 48% of remitted depressed subjects had a cognitive diagnosis. Of the 38% diagnosed with MCI, there was high representation among both the amnestic and the nonamnestic subtypes, suggesting heterogeneity in cognitive course and outcomes in LLD.


Rates of mild cognitive impairment (MCI) have varied substantially, depending on the criteria used and the samples surveyed. The present investigation used a psychometric algorithm for identifying MCI and its stability to determine if low cognitive functioning was related to poorer longitudinal outcomes. The Advanced Cognitive Training of Independent and Vital Elders (ACTIVE) study is a multi-site longitudinal investigation of long-term effects of cognitive training with older adults. ACTIVE exclusion criteria eliminated participants at highest risk for dementia (i.e., Mini-Mental State Examination < 23). Using composite normative for sample- and training-corrected psychometric data, 8.07% of the sample had amnestic impairment, while 25.09% had a non-amnestic impairment at baseline. Poorer baseline functional scores were observed in those with impairment at the first visit, including a higher rate of attrition, depressive symptoms, and self-reported physical functioning. Participants were then classified based upon the stability of their classification. Those who were stably impaired over the 5-year interval had the worst functional outcomes (e.g., Instrumental Activities of Daily Living performance), and inconsistency in classification over time also appeared to be associated increased risk. These findings suggest that there is prognostic value in assessing and tracking cognition to assist in identifying the critical baseline features associated with poorer outcomes.


The field of aging and dementia is increasingly preoccupied with identification of the asymptomatic phenotype of Alzheimer disease (AD). A quick glance at historical landmarks in the field indicates that the agenda and priorities of the field have evolved over time. The initial focus of research was dementia. In the late 1980s and 1990s, dementia researchers reported that some elderly persons are neither demented nor cognitively normal. Experts coined various terms to describe the gray zone between normal cognitive aging and dementia, including mild cognitive impairment. Advances made in epidemiologic, neuroimaging, and biomarkers research emboldened the field to seriously pursue the avenue of identifying asymptomatic AD. Accurate "diagnosis" of the phenotype has also evolved over time. For example, the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) Task Force is contemplating to use the terms major and minor neurocognitive disorders. The six papers published in this edition of the journal pertain to mild cognitive impairment, which is envisaged to become a subset of minor neurocognitive disorders. These six studies have three points in common: 1) All of them are observational studies; 2) they have generated useful hypotheses or made important observations without necessarily relying on expensive biomarkers; and 3) Based on the new

Basic activities of daily living (ADL) are self-maintenance abilities such as dressing or bathing. Instrumental ADL (IADL) are more complex everyday tasks, such as preparing a meal or managing finances (Lawton & Brody, 1969). IADL questionnaires play an important role in assessing the functional abilities of older adults and evaluating the impact of cognitive impairment on routine activities. This paper examined the cognitive processes that underlie IADL performance and concluded that the accurate and reliable execution of IADL likely draws upon the integrity of a wide range of cognitive processes. This review examined IADL in mild cognitive impairment (MCI) because of the controversial nature of distinguishing a significant decline in functional abilities in those with MCI versus dementia or MCI versus cognitively normal aging. The challenges of investigating IADL empirically were explored, as well as some of the reasons for the inconsistent findings in the literature. A review of questionnaire-based assessments of IADL indicated that: MCI can be distinguished statistically from healthy older adults and dementia, individuals with multiple domain MCI are more impaired on IADL than those with single domain MCI, mild IADL changes can be predictive of future cognitive decline, and the ability to manage finances may be among the earliest IADL changes in MCI and a strong predictor of conversion to dementia. This paper concluded with recommendations for more sensitive and reliable IADL questionnaires.


BACKGROUND: Mild cognitive impairment (MCI), defined as a transitional zone between normal cognition and dementia, requires a battery of formal neuropsychological tests administered by a trained rater for its diagnosis. The objective of this study was to develop a screening tool for MCI. METHODS: One hundred ninety seven cognitively normal controls (NC), one hundred sixteen patients with amnestic MCI -single domain (aMCI-sd), one hundred ninety five patients with amnestic MCI-multiple domain (aMCI-md), and two hundred twenty eight patients with mild Alzheimer's disease (AD) were evaluated by comprehensive neuropsychological tests and by the Memory and Executive Screening (MES). RESULTS: Correlation analysis showed that the three indicators of the MES were significantly negatively related with age (P<0.05), yet not related with education (P>0.05). There was no ceiling or floor effect. Test completion averaged seven minutes (421.14±168.31 seconds). The receiver operating characteristics (ROC) analyses performed on the aMCI-sd group yielded 0.89 for the area under the curve (AUC) (95% CI, 0.85-0.92) for the MES-total score, with sensitivity of 0.795 and specificity of 0.828. There was 81% correct classification rate when the cut-off was set at less than 75. Meanwhile, the aMCI-md group yielded 0.95 for the AUC (95% CI, 0.93-0.97) for the MES-total score, with sensitivity of 0.87 and specificity of 0.91, and 90% correct classification rate when the cut-off was set at less than 72. CONCLUSION: The MES, minimally time-consuming, may be a valid and easily administered cognitive screening tool with high sensitivity and specificity for aMCI, with single or multiple domain impairment.


OBJECTIVES: To empirically expand the existing subtypes of mild cognitive impairment (MCI) by incorporating information on neuropsychiatric and functional features, and to assess whether cerebrovascular disease (CVD) risk factors are associated with any of these subgroups. DESIGN: Latent class analysis using 1,655 patients with MCI. SETTING: Participants in the Uniform Data Set (UDS) from 29 National Institutes of Health-supported Alzheimer's Disease Centers. PARTICIPANTS: Patients with a consensus diagnosis of MCI from each center and with a Mini-Mental State Examination score of 22 or greater. MEASUREMENTS: UDS
cognitive battery, Neuropsychiatric Inventory Questionnaire, and Functional Assessment Questionnaire administered at initial visit. RESULTS: Seven empirically based subgroups of MCI were identified: 1) minimally impaired (relative frequency, 12%); 2) amnestic only (16%); 3) amnestic with functional and neuropsychiatric features (16%); 4) amnestic multidomain (12%); 5) amnestic multidomain with functional and neuropsychiatric features (12%); 6) functional and neuropsychiatric features (15%); and 7) executive function and language impairments (18%). Two of these subgroups with functional and neuropsychiatric features were at least 3.8 times more likely than the minimally impaired subgroup to have a Rosen-Hachinski score of 4 or greater, an indicator of probable CVD. CONCLUSIONS: Findings suggest that there are several distinct phenotypes of MCI characterized by prominent cognitive features, prominent functional features, and neuropsychiatric features or a combination of all three. Subgroups with functional and neuropsychiatric features are significantly more likely to have CVD, which suggests that there may be distinct differences in disease etiology from the other phenotypes.


Mild cognitive impairment (MCI) is a mild decline in single or multiple cognitive domains, while global cognition and basic activities of daily living remain intact. Nurses play an important role in early detection of MCI and providing care to maintain maximum independence for individuals with MCI. This article seeks to provide nurses with a review of the most recent research regarding the etiology and diagnosis of MCI, related risk and protective factors, patient and family experiences, and current interventions. This update provides research evidence to inform nursing practice of MCI care.


BACKGROUND: Differentiating amnestic mild cognitive impairment (aMCI) from normal cognition is difficult in clinical settings. Self-reported and informant-reported memory complaints occur often in both clinical groups, which then necessitates the use of a comprehensive neuropsychological examination to make a differential diagnosis. However, the ability to identify cognitive symptoms that are predictive of aMCI through informant-based information may provide some clinical utility in accurately identifying individuals who are at risk for developing Alzheimer's disease (AD). METHODS: The current study utilized a case-control design using data from an ongoing validation study of the Alzheimer's Questionnaire (AQ), an informant-based dementia assessment. Data from 51 cognitively normal (CN) individuals participating in a brain donation program and 47 aMCI individuals seen in a neurology practice at the same institute were analyzed to determine which AQ items differentiated aMCI from CN individuals. RESULTS: Forward stepwise multiple logistic regression analysis which controlled for age and education showed that 4 AQ items were strong indicators of aMCI which included: repetition of statements and/or questions [OR 13.20 (3.02, 57.66)]; trouble knowing the day, date, month, year, and time [OR 17.97 (2.63, 122.77)]; difficulty managing finances [OR 11.60 (2.10, 63.99)]; and decreased sense of direction [OR 5.84 (1.09, 31.30)]. CONCLUSIONS: Overall, these data indicate that certain informant-reported cognitive symptoms may help clinicians differentiate individuals with aMCI from those with normal cognition. Items pertaining to repetition of statements, orientation, ability to manage finances, and visuospatial disorientation had high discriminatory power.


BACKGROUND: Evidence from some, but not all non-randomized studies suggest the possibility that cognitive training may influence cognitive functioning in older people. Due to the differences among cognitive training interventions reported in the literature, giving a general overview of the current literature remains difficult. OBJECTIVES: To systematically review the literature and summarize the effect of cognitive training interventions on various domains of cognitive function (i.e., memory, executive function, attention and speed) in healthy older people and in people with mild cognitive impairment. SEARCH STRATEGY: The CDCIG Specialized Register was searched on 30 September 2007 for all years up to December 2005. The Cochrane Library, MEDLINE, EMBASE, PsycINFO and CINAHL were searched separately on 30 September 2007 to
find trials with healthy people. These results were supplemented by searches from January 1970 to September 2007 in PsychInfo/Psyndex, ISI Web of Knowledge and PubMed. SELECTION CRITERIA: RCTs of interventions evaluating the effectiveness of cognitive training for healthy older people and people with mild cognitive impairment from 1970 to 2007 that met inclusion criteria were selected. DATA COLLECTION AND ANALYSIS: Authors independently extracted data and assessed trial quality. Meta-analysis was performed when appropriate. MAIN RESULTS: Only data on memory training could be pooled for analysis. Within this domain, training interventions were grouped according to several outcome variables. Results showed that for healthy older adults, immediate and delayed verbal recall improved significantly through training compared to a no-treatment control condition. We did not find any specific memory training effects though as the improvements observed did not exceed the improvement in the active control condition. For individuals with mild cognitive impairment, our analyses demonstrate the same pattern. Thus, there is currently little evidence on the effectiveness and specificity of memory interventions for healthy older adults and individuals with mild cognitive impairment. AUTHORS’ CONCLUSIONS: There is evidence that cognitive interventions do lead to performance gains but none of the effects observed could be attributable specifically to cognitive training, as the improvements observed did not exceed the improvement in active control conditions. This does not mean that longer, more intense or different interventions might not be effective, but that those which have been reported thus far have only limited effect. We therefore suggest more standardized study protocols in order to maximize comparability of studies and to maximize the possibility of data pooling - also in other cognitive domains than memory.


Clinical and epidemiologic research has focused on the identification of risk factors that may be modified in predementia syndromes, at a preclinical and early clinical stage of dementia disorders, with specific attention to the role of depression. Our goal was to provide an overview of these studies and more specifically to describe the prevalence and incidence of depression in individuals with mild cognitive impairment (MCI), the possible impact of depressive symptoms on incident MCI, or its progression to dementia and the possible mechanisms behind the observed associations. Prevalence and incidence of depressive symptoms or syndromes in MCI vary as a result of different diagnostic criteria and different sampling and assessment procedures. The prevalence of depression in individuals with MCI was higher in hospital-based studies (median: 44.3%, range: 9%-83%) than in population-based studies (median: 15.7%, range: 3%-63%), reflecting different referral patterns and selection criteria. Incidence of depressive symptoms varied from 11.7 to 26.6/100 person-years in hospital-based and population-based studies. For depressed normal subjects and depressed patients with MCI, the findings on increased risk of incident MCI or its progression to dementia were conflicting. These contrasting findings suggested that the length of the follow-up period, the study design, the sample population, and methodological differences may be central for detecting an association between baseline depression and subsequent development of MCI or its progression to dementia. Assuming that MCI may be the earliest identifiable clinical stage of dementia, depressive symptoms may be an early manifestation rather than a risk factor for dementia and Alzheimer disease, arguing that the underlying neuropsychopathological condition that causes MCI or dementia also causes depressive symptoms. In this scenario, at least in certain subsets of elderly patients, late-life depression, MCI, and dementia could represent a possible clinical continuum.


BACKGROUND: To examine the effect of multicomponent exercise program on memory function in older adults with mild cognitive impairment (MCI), and identify biomarkers associated with improvement of cognitive functions. METHODOLOGY/PRINCIPAL FINDINGS: Subjects were 100 older adults (mean age, 75 years) with MCI. The subjects were classified to an amnestic MCI group (n=50) with neuroimaging measures, and other MCI group (n=50) before the randomization. Subjects in each group were randomized to either a multicomponent exercise or an education control group using a ratio of 1:1. The exercise group exercised for 90 min/d, 2 d/wk, 40 times for 6 months. The exercise program was conducted under multitask conditions to stimulate attention and memory. The control group attended two education classes. A repeated-measures
ANOVA revealed that no group × time interactions on the cognitive tests and brain atrophy in MCI patients. A sub-analysis of amnestic MCI patients for group × time interactions revealed that the exercise group exhibited significantly better Mini-Mental State Examination (p=.04) and logical memory scores (p=.04), and reducing whole brain cortical atrophy (p<.05) compared to the control group. Low total cholesterol levels before the intervention were associated with an improvement of logical memory scores (p<.05), and a higher level of brain-derived neurotrophic factor was significantly related to improved ADAS-cog scores (p<.05).

CONCLUSIONS/SIGNIFICANCE: The results suggested that an exercise intervention is beneficial for improving logical memory and maintaining general cognitive function and reducing whole brain cortical atrophy in older adults with amnestic MCI. Low total cholesterol and higher brain-derived neurotrophic factor may predict improvement of cognitive functions in older adults with MCI. Further studies are required to determine the positive effects of exercise on cognitive function in older adults with MCI.


BACKGROUND: Diagnostic criteria for mild cognitive impairment (MCI) include no significant functional decline, but recent studies have suggested that subtle deficits often exist. It is not known whether these differ by MCI type. We investigated the level and type of functional impairment among patients with MCI.

METHODS: We studied 498 patients, evaluated at the Alzheimer's Disease Research Centers of California between 2006 and 2009, who had multidisciplinary evaluations by experts, including neurologic examination and neuropsychological testing. Patients were diagnosed with MCI and subtype was determined using cognitive domain scores. In a cross-sectional descriptive study, we examined whether functional impairment differed by MCI subtype, using the Blessed Roth Dementia Rating Scale (range: 0-17, higher scores indicating more impairment).

RESULTS: Among the participants, the mean age was 75.4 years, 50.7% were women, and 81.7% were white. Patients with amnestic- (n = 392, 78.7%) and nonamnestic-type (n = 106, 21.3%) MCI had similar total Blessed Roth Dementia Rating Scale (1.6 and 1.5, respectively; P = .84) and Mini-Mental State Examination (26.5 and 26.7, respectively; P = .60) scores. Patients with amnestic MCI were more likely to have difficulty in remembering lists and recalling recent events (P < .05 for both) and less likely to have difficulty in eating and with continence (P = .01 for both), as compared with those with nonamnestic MCI.

CONCLUSIONS: Despite the MCI diagnostic criteria suggesting no functional impairment, our results indicate that patients with MCI experience mild functional deficits that vary according to the type of MCI. © 2011 Elsevier Inc.
Next Month’s Issue:

The Basics of Neuropsychological Testing and
Its Role in the Diagnosis and Treatment of Dementia

Why not share E-NEWS with your colleagues? Forward a copy of this issue.
Subscription information is found below.

To subscribe to E-NEWS, fill out the form on the following website:
http://www.healthcare.uiowa.edu/igec/publications/e-news/default.asp

To unsubscribe to E-NEWS, fill out the form on the following website:
http://www.healthcare.uiowa.edu/igec/publications/e-news/unsubscribe.asp