

# Collaborative Management of Neurocognitive Disorders in Primary Care: Explorations of an Attempt at Culture Change

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## ABSTRACT

**Introduction:** Minor neurocognitive disorder (MiND; previously mild cognitive impairment) is a transitional zone between normal cognitive function and early stages of major neurocognitive disorder (previously called dementia). Of people with MiND, 5% to 10% progress to major neurocognitive disorder. Simple interventions such as memory activities, balance exercises, and anti-inflammatory diets have been shown to improve cognitive ability. Also, education and support in group settings have proved beneficial for patients with MiND.

**Design:** Survey evaluation of outcomes of geriatric consultation and prospective educational study.

**Main Outcome Measures:** We collaborated with an academic training program to introduce into primary care the ideas of educational activities and participation in group medical care for people with MiND. Educational programs were developed and presented to family medicine residents and practicing physicians, and their knowledge was assessed before and after education.

**Results:** Two group programs were implemented: one at our hospital and one at a local skilled nursing facility. These were initially envisioned as time-limited, but participants insisted on their continuance. Thirty-two different patients attended the groups for at least six sessions. Participants enthusiastically reported positive change on qualitative interviews and showed improvement in cognition, balance, and self-esteem. Family medicine residents and practicing physicians both shifted toward lifestyle medicine and significantly changed their views on the efficacy of treatments. Despite these activities, community physicians making referrals for geriatric consultations did not change their discussions with patients and families about exercise, diet, cognitive enhancement, and socialization for MiND.

**Conclusion:** Group visits that emphasized support for increased exercise, improved diet, more movement and balance, and cognitive enhancement appear to please and benefit patients with MiND. Physicians are more open to these approaches with training after initial skepticism. A struggle exists to convince the profession that lifestyle change may be beneficial in MiND.

## INTRODUCTION

Minor neurocognitive disorder (MiND; previously called mild cognitive impairment) is a transitional zone between normal cognitive function and early stages of major neurocognitive

disorder (MaND; previously called dementia).<sup>3</sup> A diagnosis of MiND is made<sup>1</sup> when

- there is a decline in memory and cognition over time, confirmed by a family member or close friend
- there is objective evidence of memory impairment or another mental function for age
- general cognitive functions are sufficiently normal that no substantial interference with work or other social activities exists and all activities of daily life (ADL) can be performed
- the patient does not have a diagnosis of MaND
- the patient has no other medical conditions that might contribute to his/her cognitive status.

A 2009 meta-analysis found that MiND progresses to MaND in 5% to 10% of cases.<sup>2</sup> Currently there is no pharmacologic treatment approved to treat MiND. However, for those living with MiND and mild to moderate MaND, intervention has been shown to be beneficial. Almost 30% of caregivers of patients with MiND report clinically significant burden<sup>3</sup> and were found to have similar needs for social services to patients with MaND.<sup>4</sup>

Multiple methods of preventing or slowing the progression of cognitive decline have been proposed.<sup>5</sup> The ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) study showed that intervention aimed at memory, inductive reasoning, and speed of processing improved cognitive ability.<sup>6</sup> Exercise training was helpful for both MiND and MaND in physical and cognitive outcomes.<sup>7</sup> Tai chi improved cognitive outcomes, especially for visual attention.<sup>8</sup> Diets rich in fruits, vegetables, fish, and omega-3 fatty acids decreased the risk of developing MaND,<sup>9</sup> and foods high in antioxidants may enhance cognitive functions in aging adults.<sup>10</sup>

## Interventions

### Cognitive Stimulation

A 2012 Cochrane article<sup>11</sup> reviewed cognitive stimulation offered to people with mild to moderate MaND. The intervention “involves a wide range of activities that aim to stimulate thinking and memory generally, including discussion of past and present events and topics of interest, word games, puzzles, music and practical activities such as baking or indoor gardening.”<sup>11p2</sup> This review and other meta-analyses found that although there are no large, well-designed randomized controlled trials clearly showing that cognitive stimulation prevents progression of MiND to MaND,

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results of small studies suggest benefits of cognitive stimulation, particularly in maintaining ADL; results of more recent studies suggest that if cognitive stimulation is ongoing, the benefits can be sustained.<sup>12</sup> A 2014 follow-up to the ACTIVE study reporting on 2832 participants similarly found that cognitive stimulation provided lasting benefits for continued reasoning ability and maintenance of ADL.<sup>13</sup>

#### Exercise

A 2004 meta-analysis found that exercise benefited people with cognitive impairments, improving physical function, cognitive function, and prosocial behavior.<sup>7</sup> Exercise 3 times per week was associated with a significantly decreased rate of MaND in a group of 1740 adults,<sup>14</sup> and the 2004 Nurses' Health Study of 18,766 women found that those who walked a minimum of 1.5 hours a week at an easy pace had a 20% lower measure of cognitive decline.<sup>15</sup> A 2012 Cochrane review found that exercise can benefit cognitive functioning and performance of ADL.<sup>15</sup> In another study of 389 people with a diagnosis of MiND (amnestic) or early-stage MaND, Chinese Qi Gong-style exercises proved slightly more beneficial than stretching exercises in the improvement of cognitive functioning.<sup>16</sup>

#### Socialization

A 2007 study found that women with wider social networks had a lower incidence of MaND than did their less well-connected sisters.<sup>17</sup>

#### Diet and Nutrition

A Mayo Clinic researcher published a 2012 study that determined that a high-sugar and high-carbohydrate diet was implicated in the progression to MaND.<sup>18</sup> High caloric intake (more than 2100 kcal/d) is associated with MiND,<sup>19</sup> and the Mediterranean diet is associated with a lower incidence of MiND.<sup>20</sup>

An impressive body of evidence supports the beneficial role of balanced nutrition in lowering the risk of MaND.<sup>21</sup> Suboptimal micronutrient status is an early feature in the onset of Alzheimer disease.<sup>22,23</sup> Four cohort studies have been conducted in the past decade that collectively suggest an inverse relation between risk of MaND and vegetable and fruit consumption.<sup>24-27</sup> According to the National Institutes of Health, the Three-City Cohort Study<sup>28</sup> showed a risk reduction in MaND by about 30% in daily consumers of fruits and vegetables compared with subjects rarely consuming fruits and vegetables. In the Esprit study, consumption of fewer than 2 portions of fruits and vegetables per day was associated with a significantly higher risk of MiND and MaND compared with subjects consuming more than 2 portions.<sup>29</sup>

Omega-3 polyunsaturated fatty acids are a main component of the Mediterranean diet, which is inversely related to the risk of developing Alzheimer disease.<sup>30-32</sup> The Mediterranean diet is characterized by high intake of fish, vegetables, legumes, fruits, cereals, and unsaturated fatty acids mostly in the form of olive oil; low intake of dairy products, meat, and saturated fatty acids; and regular but moderate intake of alcohol. The total fat in this diet is 25% to 35% of daily caloric allowance with saturated fat at 8% or less of daily caloric allowance.<sup>33</sup> Adherence to this diet is associated with risk reduction for MiND<sup>31</sup> and Alzheimer disease,<sup>30</sup> independent of physical exercise.<sup>32</sup> In a meta-analysis of 8 prospective studies, the Mediterranean diet was strongly associated

with a risk reduction of 13% for Alzheimer disease.<sup>34</sup> A review of 34 studies in the areas of dietary restriction, antioxidants, and Mediterranean diet provided evidence that nutritional interventions against MaND and Alzheimer disease have great potential for influencing MaND development.<sup>35</sup> A large number of studies have demonstrated protective activity of the Mediterranean diet against MiND and Alzheimer disease (systematically reviewed and meta-analyzed).<sup>36,37</sup>

Some studies suggest positive effects of multivitamin and mineral supplementation on cognitive function.<sup>38,39</sup> Ames proposes a role for comprehensive, high-dose, high-potency micronutrient supplements in MiND and Alzheimer disease, although this has not been studied, to our knowledge.<sup>22</sup> A low-dose, low-potency multivitamin (eg, Centrum Silver) was ineffective in altering the course of MiND and Alzheimer disease among already well-nourished physicians.<sup>40</sup>

Elevated homocysteine level has been associated with increased risk of Alzheimer disease and faster cognitive decline.<sup>41-43</sup> MaND has been associated with a deficiency of vitamin B<sub>12</sub>.<sup>44</sup> The prevalence of vitamin B<sub>12</sub> deficiency has been estimated to be 15% to 44% in the elderly.<sup>45</sup> Lower levels of serum vitamin B<sub>12</sub> were predictive of cognitive decline ( $p < 0.05$ ).<sup>46</sup> Low concentrations of folate and high levels of homocysteine in the blood are related to MaND, Alzheimer's disease, and poor cognitive function in older adults.<sup>47-54</sup> In the TREDEM (Treviso Dementia) study carried out in Treviso, Italy,<sup>55</sup> close associations were found between low serum folate levels and severe cortical-subcortical atrophy along with severe hippocampal atrophy measured by the width of the temporal horns of the lateral ventricles. The Nun Study<sup>37</sup> and the Rotterdam Scan Study<sup>56</sup> showed a similar correlation between low serum folate levels and high brain cortical atrophy. Published trials of supplementation with these vitamins have yielded mostly unsuccessful results.

Trials aimed at exploring the efficacy of antioxidant strategies in Alzheimer disease and in what is considered its preclinical form, MiND, have been largely unsuccessful so far.<sup>57-62</sup> A recent meta-analysis of 7 studies on dietary intakes of vitamin E, vitamin C, and beta carotene confirmed a relative risk for the development of Alzheimer disease of 0.76 for vitamin E, 0.83 for vitamin C, and 0.88 for beta carotene.<sup>63</sup> A trial of vitamin E in 341 patients with moderate to severe Alzheimer disease<sup>64</sup> treated with a daily dose of 2000 IU of vitamin E for 2 years showed a significant delay in Alzheimer disease progression and in nursing home placement compared with placebo.

#### Group Visit Model

There is a growing body of literature supporting the efficacy of group medical visits for chronic medical conditions,<sup>11</sup> although mixed results have been found for the efficacy of cognitive training programs in demented<sup>12,13</sup> or nondemented older adults.<sup>14</sup> We hypothesized that group medical visits involving memory training, balance exercises, and nutrition consulting prevent cognitive decline, improve gait, and provide socialization for patients with MiND and their caregivers.

Kurz et al<sup>65</sup> conducted a four-week group intervention in 2008 that included cognitive training, activity planning, training in

self-assertiveness, stress management, relaxation, external memory aids, and physical exercise. Troyer and colleagues<sup>66</sup> have used group visits for memory training and lifestyle education over six months, which have resulted in gains at a three-month posttest. Group teaching of visual memory strategies have been successful in helping people recall placement of objects in their homes.<sup>67</sup> Increasingly, group efforts are being implemented, including a two-week intensive program offered through the Mayo clinic, as well as “Cogs Clubs” and “Memory Cafes,” both grassroots movements that meet standards for clinically relevant interventions.<sup>68</sup>

There is increasing literature on the benefits of socializing in groups and interpersonal learning as a mechanism of change. Interpersonal group therapy, according to Yalom and Leszcz,<sup>69</sup> offers 11 curative factors (see Sidebar: Interpersonal Group Therapy Curative Factors).

Groups offer much more than instruction on physical and mental exercise and nutrition. They offer a place where patients can embrace the change in their lives by finding purpose, focusing on the positive, reducing stress, enjoying uninhibited socialization and laughing; all factors that according to research may reduce the impact of symptoms of MiND and improve the daily lives of the patients.

### Minor Neurocognitive Disorder Groups

Recent literature has suggested that those with a diagnosis of MiND can benefit from multicomponent group visits to help them accommodate the changes that they experience, with a view to using cognitive stimulation to intervene in the possible progress of their illness<sup>65</sup> and to encourage continued facility with ADL.

Groups have been very helpful in treatment of medical conditions such as diabetes,<sup>70</sup> high blood pressure, and heart disease. The number of physicians who are using group visits in their primary care practice has been rising sharply since 2004, with 15% of physicians now including them as a practice model.<sup>71</sup> Group medical visits commonly focus on those linked through a shared diagnosis. *The American Academy of Family Physicians reports a study of group visit outcomes between 1974 and 2004, which resulted in the following*<sup>71</sup>

- reduced obesity
- reduced blood pressure and cholesterol levels
- improved quality of life
- improved health behaviors
- increased patient satisfaction
- improved physician-patient relationships
- improved control of mean blood glucose

### Interpersonal Group Therapy Curative Factors

1. Instillation of hope: One of the greatest worries of patients is that MiND may indicate that they will soon have a more serious illness, including Alzheimer-type MaND. Although there is no known treatment that can reverse the damage that has happened in the brain, there are therapies that may reduce some symptoms and can improve patients' daily lives today.
2. Universality: There is something powerful in knowing that you are not alone. Members of the MiND group enjoy comparing, not hiding, their problems with other members.
3. Imparting information: Whether the members are discussing a new “healthy” recipe, telling about the benefits of using a day journal to keep on schedule, or showing how they do leg exercises while washing dishes, they always are willing and eager to share information with a fellow member.
4. Altruism: There is a bond that builds in the group, including the caregivers and/or partners, that resembles more of a family than strangers with a diagnosis of MiND. Members are there for each other, offering help and support.
5. Corrective recapitulation: Although probably not what Yalom had in mind, the program offers a safe place for the members to work out problems that they are having with their families. Often, MiND changes how the family views the patient. The patient is no longer the parent who can do anything and everything, the one who has all the answers. The patient often thinks that his/her family no longer comes to visit but comes to “check up” on him/her. Members offer support and give suggestions on how the patient might handle the situation. Just being able to state the problems to the group serves as a corrective emotional experience.
6. Development of social techniques: Patients diagnosed with MiND often suffer social setbacks and find a need to develop new social techniques. Group members have admitted to feeling anxious and completely mixed up at social events with too many people in attendance. They find that they are no longer able to follow conversations. Something as simple as a trip to the store or a church supper can become a burden too big to carry. The group encourages socialization and works together on solutions.
7. Imitative behavior: Members are eager to hear how everyone else handles situations and problems. If something works for one member—a white board on the fridge for a reminder, a day planner in the purse—it might work for another.
8. Interpersonal learning: Through the process of interacting with the other members, each member is able to achieve a greater level of self-awareness. Because of the safety of the group, members are willing to express their emotions to other members. They are more able to accept who they are now and to recognize their strengths and weaknesses.
9. Cohesiveness: The cohesiveness of the group is evident by the members arriving early, giving hugs, laughing together, sharing stories (some embarrassing), attending each meeting, and leaving late. Members have said they consider the group to be “my new best friends.”
10. Catharsis: Members are at and in a place, physically and mentally, where they can admit to their forgetfulness rather than hide it. This frees them to better cope with the changes and to strategize new coping mechanisms.
11. Existential factors: Members of the MiND group enjoyed their program enough that they asked to continue meeting after the study was completed. They enjoy sharing and supporting one another, and they recognize that in their personal battle against MaND, they are not alone. They voice their feelings about how they want to live their life. They do not want cognitive impairment to be their life, but through the group they want to learn how they can live life to its fullest.

- decreased emergency and urgent care visits, as well as referrals to other specialists
- decreased hemoglobin A<sub>1c</sub> levels
- better medication compliance and increased self-efficacy (ie, judgment of their capabilities to carry out the specific tasks necessary to achieve a desired goal).

In a group medical visit, a physician participates in the group care and can bill for services delivered, usually with the same codes as when delivered individually. Medicare currently allows individual codes to be used in a group visit.

A group medical visit also offers an invaluable opportunity to get to know patients. A physician seldom has time to listen to a patient for as long as either would like. In a group setting, the physician and staff have the opportunity to communicate with patients in a different way that may improve mutual understanding.

An ideal leadership combination for a group medical visit consists of a nurse, a behavioral therapist, and a physician or nurse practitioner with training in geriatrics. The physician's or nurse practitioner's presence encourages improved relationships with participants and provides the practitioner with invaluable insight into their progress.

**... those with a diagnosis of MiND can benefit from multicomponent group visits to help them accommodate the changes that they experience, with a view to using cognitive stimulation to intervene in the possible progress of their illness ...**

Implementing group medical visits that focused on changing lifestyle proved to be much harder than we had imagined. Despite the literature we reviewed in the Introduction, our colleagues did not believe that changing lifestyle could alter the course of neurocognitive disorders. Virtually all prescribed medication and believed in the benefits of medication far more than the benefits of lifestyle change. An individual appointment model was the norm. This led us to understand that we were doing more than just implementing what we thought was an innovative, evidence-based program. We were changing culture, and changing culture is difficult. We were going against the norm by advocating frequent (as often as weekly) group medical visits emphasizing lifestyle change in which people contribute to each other's care and participate more in their own care. The emphasis was not on pharmaceutical intervention, and behavioral health was fully integrated into the group visit.

Our hypothesis was that we could change physicians' beliefs about neurocognitive disorders and that group office visits involving memory training, balance exercises, and nutrition instruction would prevent memory decline, improve gait instability, and provide socialization for patients with MiND and their caregivers.

## METHODS

We limited groups to fewer than 15 participants, men or women, including family members and caregivers. We initially limited groups to people who had a diagnosis of MiND but discovered

over time that the boundary between MiND and MaND is a fluid one, and that willingness to come was more important than whether the person met the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* criteria<sup>72</sup> for MiND or MaND. Our first group met for 90 minutes weekly in the hospital. Our second group met for 2 hours weekly in a local skilled nursing facility. We strongly encouraged group members to practice the cognitive stimulation exercises between sessions, to adopt the information about diet and nutrition, and to exercise.

Group leaders included a behavioral health practitioner, a geriatric medical practitioner, and a nurse. Our initial group began as time-limited but became open-ended because the patients did not want to stop. An open-ended, ongoing group meant that participants had a "home" for their concerns as they worked on maintaining their cognitive function. Any health practitioner could refer people to the groups. Groups were open enrollment, meaning that anyone could join the group at any time if s/he chose. We strived to create a nonjudgmental, friendly group culture and encouraged people to attend whether or not they participated, thereby relieving them of anxiety and reassuring them that the group was intended to be an accessible, patient-friendly environment. Our initial group for people with MiND met, and continues to meet weekly, on the first floor of our hospital, requiring no stairs or elevators. Our second group involved a ramp or an elevator to reach the room. We did not charge for the hospital group but did charge insurance for the second group (but not the family members or caregivers who attended).

Follow-up calls or visits were made with 110 patients and their families who had attended 2-hour geriatric assessment visits in which recommendations to their primary care clinicians had been made for lifestyle changes. We recorded how often these changes actually occurred.

## Education for Physicians

Creating two groups for patients with MiND and their caregivers was one step toward changing the medical culture toward cognitive impairment. To create more active change, we used our experiences from the group visits to teach our family medicine residents about MiND. Each first-year resident rotated through geriatrics for four weeks. During that time, they were exposed to the MiND group or groups and were taught the current literature on MiND (as outlined in the Introduction). Residents were given pre- and posttraining assessment questionnaires on their knowledge of MiND literature.

Additionally, we prepared a lecture about MiND and group medical visits for practicing physicians in our community and others. We presented this lecture at our hospital and at two national conferences and obtained pre- and postassessments of knowledge of therapies for MiND.

We developed a pretest and a posttest for assessing knowledge, which consisted of a list of 24 potential therapies for MiND, for which physicians were instructed to rate in order of importance. Second came a list of 24 laboratory and imaging evaluations, that physicians could order as part of their MiND workup, which they were also asked to rate in order of importance. There were 3 additional questions on the pre- and posttests about their comfort

level with patients with MiND and about how much information they thought they possessed to care for these patients. The posttest added 2 questions related to how much the presentation had changed their understanding of MiND and how likely it was that they would participate in group medical visits for MiND. We compared the 2 rankings using the Spearman rank correlation in SPSS Version 21 (Statistical Package for the Social Sciences, IBM Corp, Armonk, NY).

We assessed the knowledge of our family medicine residents (N = 18) using multiple-choice questions and compared pre- and posttests using the paired *t*-test procedure in SPSS. At the end of their training year, we gave the residents the same posttest that we had given to the practicing physicians. We also asked if they believed they could administer the Montreal Cognitive Assessment Scale, a screening test for MiND.

### Group Facilitation and Activities

We emphasized in training that group leaders needed to have patience, compassion, and skills in interpersonal communication. We used training resources in nonviolent communication, active listening, reflection and reframing, and nonverbal communication. We stressed to group leaders that simply listening to a participant's concerns and providing compassionate, respectful guidance through the exercises could accomplish much.

All group members arrived independently. Family caregivers who accompanied group members were welcome to remain and participate.

We aimed to keep group activities at a level that ensured success for almost everyone, sometimes making them deliberately simple. We relied on no-cost online resources for cognitive stimulation and enhancement. A check-in conversation began the group meeting, in which group members gave a brief description of their activities during the past week. These activities might have included walks in the park with their dog, visits from family, bridge games, or shopping. Members were encouraged to discuss any difficulties or obstacles they faced throughout the week as well as their successes. Group members were encouraged to collaborate on finding solutions for difficulties or obstacles.

Other group activities included developing breathing and mindfulness skills, movement and exercises, cognitive stimulation, and psychoeducation.

### Breathing and Mindfulness Skills

Qi Gong practices, mindfulness meditation, and other breathing practices were used to teach breathing and movement. Basic Qi Gong techniques can be easily found through video and are easy to learn. The important element is the flow of movement.

Basic mindfulness was considered a useful skill to reduce anxiety and depression. A common mindfulness exercise is to remind oneself to put aside worries and draw some slow deep breaths, aware of nothing more than the feeling of the breath as it travels in and out the nose. If an anxious or intrusive thought arises, one allows the thought to pass by, to be considered later. During this time, we offered group members the opportunity to take some moments in life to simply breathe.

Free resources for mindfulness and breathing can be found at [www.freemindfulness.org/download](http://www.freemindfulness.org/download), <http://marc.ucla.edu/body>

[cfm?id=22](http://cfm?id=22), and [www.umsystem.edu/newscentral/mindfuleating/audiovideo-recordings](http://www.umsystem.edu/newscentral/mindfuleating/audiovideo-recordings).

### Movement

The group leaders taught Qi Gong-based moves; they focused on movement *with the breath*, gentle movements to encourage retention of balance and range of motion. Qi Gong is an exercise form that is suited to people who may need to begin very slowly. Patients were advised to go at their own pace and to be careful not to exceed their own limitations.

Qi Gong is said to reduce stress, build stamina, and increase vitality.<sup>73</sup> Members were encouraged to spend at least 15 minutes a day repeating the Qi Gong and balance exercises at home.

Typical exercises included

- “Begin with a slow breath in. As you are breathing in, raise your arms. When you have stopped your ‘in’ breath, stop moving your arms. Begin to breathe out. As you are breathing out, move your arms down. Repeat this exercise, remembering to begin to breathe *before* you begin to move.”
- “Now work with raising and lowering a leg, holding onto a table at first, if necessary. Make slow movements that are always *with the breath*.”

Resources for exercises can be found online<sup>74</sup> and by searching with the parameter “exercise elderly.”

### Cognitive Stimulation

Cognitive stimulation was offered in the form of games and work problems (eg, map reading, memory work) that used memory, inductive reasoning, and problem-solving skills. Two or three different exercises were offered each week. Participants were encouraged to practice the exercises at home.

Cognitive stimulation practiced the following skills and tasks:

- Simple problem-solving
- Pattern recognition
- Deductive reasoning skills
- Recall memory: Exercises included even simply recounting the events of the past week. Other ideas included recognizing which object had been removed from a group, memorizing a small group of objects and then recalling what they were when they were covered up, and grouping objects according to their common purpose. Telling life stories also is good memory recall work and helped to get to know the group members' needs
- Recognition memory: For these exercises, group participants can be invited to bring pictures of family members, look through magazines, photo albums, and the like. Pictures congruent with members' cultural experiences are useful, such as historical photographs of events and places, particularly ones that the participants have encountered in their own lives.

Resources for cognitive stimulation include many online worksheets for cognitive stimulation. The University of Alabama has a downloadable shareware publication that lists hundreds of activities for cognitive stimulation ([www.uab.edu/medicine/tbi/uab-tbi-information-network/uab-tbims-home-based-cognitive-stimulation-activities](http://www.uab.edu/medicine/tbi/uab-tbi-information-network/uab-tbims-home-based-cognitive-stimulation-activities)). Although the university has directed its attention to traumatic brain injury, the exercises translate for anyone who needs to practice cognitive functioning.<sup>75</sup> The European Union's research fund has also produced a volume of activities for cognitive stimulation.<sup>76</sup>

### Psychoeducation

Psychoeducation<sup>77</sup> involved the following:

- We emphasized the value of practical skills for memory retention and activation—exploring ways for people to stay organized, use labels, make lists, place reminders, and more—as well as to maintain independence. Participants were encouraged to practice techniques at home and report to the group. Information sharing was encouraged, especially regarding solving the problems of operational necessities such as organizing rides, cooking, paying bills, and managing activities of daily life.
- We encouraged the augmentation of social skills. Participants were encouraged to discuss their problems and frustrations, as well as their successes
- We encouraged making lifestyle changes for healthy aging. We offered current research on the value of nutrition, diet, and exercise for a healthy mind. We encouraged people to try the Mediterranean diet, to increase their intake of vegetables, and to walk or exercise each day. We helped people work around physical limitations to find ways to engage in even limited activity. Where appropriate, we encouraged them to ask their health care clinician for a referral for physical or occupational therapy.

Group sessions ended with a general, open discussion and mention of any plans for what participants would take with them from the group for their activities until the next meeting.

### RESULTS

Group 1 consisted of 6 patients and 6 spouses or caregivers on average. Group 2 contained 4 patients and 6 caregivers on average. Patient interviews revealed that all group members thought that the group provided a useful setting for the provision of cognitive stimulation, balance, breathing exercises, and current research about the importance of nutrition and lifestyle changes. The group participants had all made changes to their nutrition, engaged in more social activities, reported improved sleep, and reported relief from some of the shame and anxiety they felt about having been diagnosed with MiND. They reported that the breathing exercises helped with focus and balance.

Group 1 met at our local hospital, and Group 2 met at the community room of one of the skilled nursing facilities that our hospital owned. Following 6 weeks of participation, half of our participants showed and maintained (over an average of 7.3 months) statistically significant improvement on the 5-word delayed recall and the 5-second 1-leg stand from their baseline testing ( $p < 0.05$ ). One-fourth of the participants started with a perfect score on delayed recall and 5-second one-leg stand and maintained that score over time. One-fourth of the participants were trending downward from their baseline score. A total of 32 patients were assessed. None of our participants scored as depressed on the Geriatric Depression Scale developed by Yesavage et al.<sup>78</sup> One developed a score in the depression range during the group in relation to significant personal stressors. All participants improved their 5-second 1-leg stand. All participants reported improved sleep. All participants reported making healthy dietary change. All of these changes were statistically significant at  $p < 0.05$  using the paired  $t$ -test to compare pre- and posttest results.

We noticed that participants became more comfortable with each other and began encouraging one another and socializing more by the third session, suggesting that one should strongly encourage participants who feel reluctant about attendance to come at least three times before giving up. Caregivers who attended the group sessions reported similar benefits as the participants with regard to better cognition and dietary changes, though these were not measured.

### Changing the Local Culture of Care

Our goal in presenting information to physicians and our family practice trainees was to increase their understanding of the importance of exercise and physical activity, cognitive stimulation/enhancement, social support, and the Mediterranean diet in delaying onset of memory loss and preventing progression of memory loss. We developed a pre- and posttest for assessing knowledge, which consisted of a list of 24 therapies for MiND, and physicians were instructed to rate them in importance. There was a list of 24 diagnostic tests, which they could order as part of their MiND workup, which they were also asked to rate in importance. There were 3 additional questions on the pretest about comfort with patients who have MiND and about how much information the physicians and trainees thought they possessed to care for these patients. The posttest added 2 questions related to how much the presentation had changed their understanding of MiND and how likely was it that they would have group medical visits for patients with MiND.

Participants in all 3 settings (local hospital, international, national conference) in which we presented this information did not agree with us in their pretests. We gave a total of 52 pre- and posttests. Respondents almost uniformly believed in the value of “memory-preserving” medications (donepezil, memantine, rivastigmine, galantamine) for patients with MiND before the training. To determine if a change occurred in their perception, we asked them to rank interventions before their training and after their interventions. A statistically significant change occurred in their pre- and posttraining rankings for how to treat MiND ( $p < 0.001$ , Spearman rank correlation in SPSS). Visual inspection of their answers revealed that medications had dropped in importance to the bottom of their list, and exercise and diet had risen to the top. Cognitive stimulation was more varied in placement in their hierarchical listings. We found a statistically significant change in their understanding of the importance of exercise and physical activity, Mediterranean diet, cognitive enhancement/stimulation, and social support, all at the  $p < 0.001$  level or better.

We assessed the knowledge of our 18 family medicine residents using multiple-choice questions and found a statistically significant increase in knowledge from pre- and posttests ( $p < 0.001$  using paired  $t$ -test procedure in SPSS). At the end of their training year, we gave them the same pre- and posttests after the same hourlong lecture that we gave practicing physicians. We found no difference on pre- and posttesting with high Spearman correlation coefficients to how we rated the answers. We took this to mean that we were being effective in teaching them how to manage MiND during the course of the year. All survey

respondents believed that they could administer the Montreal Cognitive Assessment Scale, a screening test for MiND.

We found ourselves advocating ongoing group medical care in an environment in which this was not the norm, despite its being widely used elsewhere. After the training, 55% of physicians said they wanted to try group medical care for patients with MiND. Thus far, we continue to provide a free group at the hospital. We have also implemented a group at our local nursing home. There, we charge for our patients and allow anyone else to come for free. However, we were unable to implement group visits at our own outpatient clinic. The reasons cited for not implementing group medical care have been as follows: 1) “no one will come,” 2), “there’s not enough space,” 3) “we won’t make enough money,” 4) “it will be too much trouble for the front-office staff,” and 5) “it will consume too many resources in nursing time and staff.”

### Behavior Change with Conventional Geriatric Assessment

Of 110 geriatric assessments (performed in 2-hour office visits) in which some level of neurocognitive disorder was assessed, lifestyle changes were recommended, typically including increasing exercise (predominantly asking patients to take a daily walk because most were sedentary), making dietary changes (typically reducing consumption of sugar and simple carbohydrates, since most of our patients had a diet high in sugar and simple carbohydrates; and increasing intake of fruits and vegetables), cognitive stimulation (suggestions made appropriate for the individual patient), and socialization (suggestions made appropriate for the individual patient).

In keeping with national recommendations, we recommended against “memory-preserving” drugs for MiND and attempted to minimize use of benzodiazepines, opiates, and anticholinergic medications. For MaND, we presented patients and their families with the pros and cons of “memory-preserving” drugs, including an explanation of the number to treat for benefit and the number to treat for harm, and of the level of change one might expect; we then recommended treatment in accordance with the family’s wishes. We conducted follow-up of these 110 assessments an average of 7.3 months later (range = 6.1 months to 10.3 months; standard deviation = 2.5 months) and found that only recommendations to start treatment with “memory-preserving” drugs were implemented. We found no cases in which recommendations were implemented to make lifestyle changes or to stop use of “memory-preserving” drugs in patients with MiND. Recommendations to stop opiate use were followed by 1 of 15 patients; to stop use of benzodiazepines, by 1 of 12 patient; and to stop use of other medications, by 12 of 34 patients.

### CONCLUSION

Patients and caregivers can benefit from a multidisciplinary approach across nursing, behavioral health, and medicine with regard to preventing cognitive decline, improving balance, making healthy dietary changes, and increasing socialization. Structured, multimodality group office visits could be an effective strategy for management of patients with MiND (formerly called mild cognitive impairment) in primary care settings. The curriculum devised in this study is reproducible, and further large-scale

studies may prove this curriculum to be a potential resource for primary care physicians.

Weekly group visits have continued at the hospital at no cost to the patients and caregivers. Group medical visits continued for one year at the local skilled nursing facility and were stopped when personnel moved. A group held in a primary care physician’s office can create the sense of the medical home that patients appreciate. Some physicians successfully create groups in their waiting room space, after hours.

The conventional two-hour geriatric assessment with report and referral back to the primary care physician produced no behavioral change and minimal medication change. Therefore, its utility is questionable, although its proponents were unwilling to question it at the institution where we practiced.

One important obstacle to changing the culture of medicine is the ethnocentrism of contemporary medicine. *Ethnocentrism* is the point of view that one’s own way of life is to be preferred to all others.<sup>79,80</sup> It prevents people from understanding the other, let alone taking the other seriously. The views of others are judged by the standards of one’s own culture. Van der Geest<sup>81</sup> described how the professions enculturate their practitioners to view and explain the world in particular ways. Biomedical treatment vs biopsychosocial prevention paradigms can be quite different.

The culture of medicine usually turns first to medications as solutions and is skeptical of other answers. The bias is against nonpharmaceutical approaches. Each time we present these ideas, we encounter the medical response—the upraised eyebrows, the rolling of the eyes, the shrug of the shoulders, the dismissal from a segment of our audience. Others, however, are interested and are willing to entertain another culture, a culture in which action can produce change, in which changing lifestyle has an impact. The challenge is one faced by anthropologists: to translate cultures to each other. Our challenge is to integrate the disciplines of medicine, nursing, behavioral health, and lifestyle or integrative medicine. However, as van der Geest says: “Interdisciplinarity is not only a long and difficult word, it is also a long and difficult road. It is more fashionable as lipservice than actual practice. . . . But disciplines are merely human designed (cultural) tools to study and interpret/explain reality. No discipline is all-embracing, or has the final word.”<sup>79)p871</sup>

More work remains to be done on how to change the culture of medicine in directions suggested by the empirical evidence, especially when that evidence contradicts common assumptions of the biomedical model. ❖

<sup>a</sup> Throughout this article, we will use the convention of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* and the International Classification of Diseases, Tenth Revision of referring to mild cognitive impairment as minor neurocognitive disorder (MiND) and calling dementia of all types major neurocognitive disorder (MaND). We still refer to the Alzheimer subtype of MaND as Alzheimer disease.

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The author(s) have no conflicts of interest to disclose.

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## Strong and Clear

To keep the body in good health is a duty ...  
otherwise we shall not be able to keep our mind strong and clear.

— Siddhartha Gautama, the Buddha, 567-484 BC, ascetic and sage