

# Coaching in Healthy Dietary Practices in At-Risk Older Adults: A Case of Indicated Depression Prevention

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Prevention of major depressive disorder is important because current treatments are only partially adequate in reducing symptom burden and promoting health-related quality of life. Lifestyle interventions may be a desirable prevention strategy for reasons of patient preference, particularly among older patients from minority groups. Using evidence from a randomized depression prevention trial for older adults, the authors found that coaching in healthy dietary practices was potentially effective in protecting at-risk older adults from developing incident episodes of major depression. The authors describe the dietary coaching program (highlighted in a case example) as well as the feasibility and

potential efficacy of the program within the context of evidence-based interventions for preventing episodes of major depression and mitigating symptoms of depression. Older adults receiving dietary coaching experienced a low incidence of major depressive episodes and exhibited a 40%–50% decrease in depressive symptoms, as well as enhanced well-being, during the initial 6-week intervention; these gains were sustained over 2 years. The authors also describe why lifestyle interventions like coaching in healthy dietary practices may hold promise as effective, practical, nonstigmatizing interventions for preventing episodes of major depressive disorder in older adults with subsyndromal depressive symptoms.

(*Am J Psychiatry* 2014; 171:499–505)

**P**reventing major depressive disorder in older adults could help improve their daily functioning, quality of life, and disease outcomes (1, 2). As proposed by the Institute of Medicine, an efficient approach is to target mildly symptomatic older adults because they are at highest risk of developing major depression (3–5). Preventive interventions that focus on at-risk adults with subsyndromal depressive symptoms (“indicated prevention”) would probably have the greatest impact in protecting older adults from the full clinical disorder and preventing the physical and emotional burdens associated with major depression (1, 6, 7).

Depression prevention research has shown substantial progress in recent years, building evidence for strategies that effectively reduce or delay the occurrence of incident cases of major depression (8–10). However, there is no gold standard for the prevention of major depression. Clinical researchers continue to ask which intervention to use and how best to implement prevention strategies in community-dwelling elderly populations. The optimal intervention is one that both alleviates depressive symptoms and prevents the downstream burdens of major depression (1).

Given the accelerated pace of the aging of the U.S. population and the projected doubling of older adults living with depression by 2030, identifying and disseminating successful approaches to depression prevention is essential. While conducting a randomized trial testing problem-solving therapy as indicated prevention, we

observed a promising strategy for the prevention of major depression. In this trial, our attention control arm—coaching in healthy dietary practices—also appeared to protect older adults from incident episodes of major depression over 2 years of follow-up, reduce symptom burden, and improve health-related quality of life (11). This evidence is preliminary, given the absence of a concurrent usual-care control condition, but it may help inform the development of lifestyle interventions aimed at preventing major depression in at-risk older adults. Data from a recent meta-analysis indicate an incidence rate reduction of 20%–25% for psychological interventions relative to usual care (12). We observed greater reductions in both arms of our randomized controlled trial (40%–50%) (11).

## Lifestyle Modification for Preventing Major Depression

There are several reasons why a lifestyle intervention like coaching in healthy dietary practices is a promising strategy for the prevention of major depressive disorder in at-risk older adults. First, older patients prefer counseling services to antidepressant medication for treatment of depression (13). Antidepressant medications, while effective in severe depression, show minimal benefit relative to placebo in subsyndromal depression (14). As a non-pharmacological alternative, lifestyle interventions are

This article is featured in this month's *AJP Audio* and is an article that provides *Clinical Guidance* (p. 505)

**A 71-year-old woman with chronic lymphoid leukemia and dysthymic disorder receives coaching in healthy dietary practices in a depression-prevention study.**

“Ms. J” is a 71-year-old widowed black woman with a DSM-IV diagnosis of dysthymic disorder, late onset with atypical features, that began in 2006 when she was disabled with chronic lymphoid leukemia. She had a score of 24 on the Center for Epidemiologic Studies Depression Scale at baseline. Ms. J reported a conflicted relationship with her son, a crack cocaine user who lives with her along with his girlfriend. Ms. J agreed to enroll in a study and was randomly assigned to receive coaching in healthy dietary practices.

Interpersonal issues were discussed during the intervention only as they related to healthy nutrition. A review of eating patterns in session 1 revealed that Ms. J typically consumed foods with high contents of fat and simple carbohydrates and had gained 22 pounds over 2 years. She was oriented to the structure and principles of the dietary program and engaged in six sessions over 9 weeks, followed by booster sessions 3 months, 9 months, and 15 months after completion of the initial six sessions. Each session lasted 30–45 minutes. A guiding principle of the dietary program was that older adults need higher nutrition content with fewer calories, as illustrated by the “Modified MyPyramid for Older Adults,” in which vertical triangles of varying sizes indicate the importance of all food groups, but in specific proportions. Adequate hydration is essential, as is healthy exercise, which was noted but not specifically pursued as a goal during this intervention. Daily mindfulness of the type and quantities of food consumed was introduced in session 1 and encouraged throughout the intervention using the “Rate Your Plate” diary. Ms. J engaged in “Rate Your Plate” in only a cursory way, preferring to focus on making a few important changes in her food choice and preparation. Her primary goals were to increase the frequency of home cooking, improve the quality of her food choices and manner of preparation (less fried, more baked), reduce snacking on empty-calorie and low-nutrition foods, and rely less on the protein shakes that her physician had recommended. She

was provided with a copy of the National Heart, Lung, and Blood Institute pamphlet “Heart-Healthy Cooking, African American Style” in session 1 and expressed her appreciation for the examples and suggestions it contained.

Ms. J’s score on the Beck Depression Inventory (BDI) remained at 13 or 14 during the program, except at session 3, when her score was 11. At session 5, Ms. J reported that her cholesterol level was now in the healthy range and that she was continuing her efforts to prepare more healthy meals, transitioning from whole milk to 2% and from butter to soft margarine. Her white cell count had also increased, and she and her physician were in a period of watchful waiting to see if this would signal a recurrence of her chronic lymphoid leukemia. Approximately 4 months from baseline, after completing the intensive intervention phase and 1 month before booster session 1, Ms. J was diagnosed with a recurrence of chronic lymphoid leukemia, and chemotherapy was started 2 weeks later. Her BDI score decreased to 12 at booster session 1 (3 months posttreatment), to 10 at booster session 2 (9 months posttreatment), and to 11 at booster session 3 (15 months posttreatment) as she worked to find ways to increase her appetite for higher-nutrition foods—like more aromatic and appealing preparations—while undergoing active leukemia treatment. At booster session 2, her body mass index (BMI) had increased from 34.78 to 35.75. She noted that she had returned to using protein shakes but that she was also preparing more healthy foods and eating them in better proportions than she had done before beginning the dietary coaching program. Follow-up assessments showed further decreases of her BDI score to 9 at 18 months and to 8 at 21 months. Ms. J’s final BMI was 32.28, or 2.50 points below her baseline level. Her score on the Social Problem-Solving Inventory increased from a baseline value of 101 to a final value of 124, reflecting improvements in positive problem orientation and decreases in avoidant coping.

behavioral interventions that use counseling strategies to equip participants with the necessary knowledge and skills to modify and sustain a healthy diet, increased physical activity, and/or healthy weight. Regular engagement in these health behaviors is protective for mental health, and although they are widely recommended for the prevention and treatment of depression (15, 16), we are not aware of any clinical trials that systematically test lifestyle modification for indicated prevention of major depression. Lifestyle modification may have longer-lasting preventive effects than pharmacotherapy given its focus on building self-management skills to sustain a healthy behavioral routine.

Second, lifestyle interventions may appeal to older adults, especially those of racial/ethnic minority groups, because they are nonstigmatizing and culturally acceptable. Targeting minority elderly patients for depression prevention is of

high public health importance because of inequalities in access, service use, and treatment of depression between races (17). Older minority respondents report significantly greater depression symptoms than older whites (18) but are reluctant to pursue mental health services because of distrust, stigma, and discrimination (19). These barriers may also explain why older minority patients are less likely than older whites to sustain depression treatment (20). Lifestyle interventions that are culturally sensitive may help reduce the disparities in mental health service use among our increasingly diverse older population.

Third, lifestyle may be the best intervention option for depression prevention in patients who are overweight or obese. More than one-third of adults age 65 and older are obese (21). Obesity is a risk factor for depression, and there is a reciprocal link between weight change and depressive

symptoms (22). Several intervention studies have even suggested that weight change mediates the effects of depression treatment (23). If the obesity epidemic does not abate, modifications to existing depression prevention procedures may be required to treat overweight and obese older adults.

Despite these strengths, questions remain regarding what type of lifestyle intervention to use for at-risk older adults (e.g., dietary, physical activity, weight reduction, sleep). Ideally, a good preventive intervention is one that demonstrates patient safety, plausible evidence of efficacy, cost-effectiveness, and acceptability among older adults. To begin to address these concerns and promote the successful conduct of lifestyle modification as indicated prevention of major depression, we summarize treatment results from our recent randomized controlled trial that incorporated lifestyle modification as an active control (11).

## Our Randomized Depression Prevention Trial

The study has been described in detail elsewhere (11). Briefly, the primary objective was to determine whether problem-solving therapy and coaching in healthy dietary practices could prevent episodes of major depression, mitigate depressive symptoms, and enhance health-related quality of life in older blacks and whites with subsyndromal depressive symptoms. Here we present intervention results for 122 participants (73 whites, 48 blacks, 1 Asian) who were allocated to the dietary coaching arm.

The dietary coaching program was originally designed to be an attention control; we adopted it because, while we did not think it would affect depression, we thought it was important to offer a condition that could have other positive health effects and attract black participants into the trial. The patient in the vignette, Ms. J, was an older black woman who presented with a diagnosis of dysthymic disorder, late onset with atypical features. She was assigned to the dietary coaching arm, and she set goals to consume a more nutrient-dense diet with fewer calories. Although a diagnosis of dysthymic disorder was not required, it fulfilled our criterion for subsyndromal depressive symptoms. The goal of the trial was to determine whether problem-solving therapy was superior to dietary coaching in preventing incident episodes of major depression.

### Psychiatric Assessment

We screened individuals age 50 and older and required a score  $\geq 11$  on the Center for Epidemiologic Studies Depression Scale (CES-D) (24) and an absence of a major depressive episode during the previous year. We

administered the Structured Clinical Interview for DSM-IV (25) to rule out current major depressive disorder and suicidality. Participants had to have a score  $\geq 24$  on the Mini-Mental State Examination (26) to exclude probable dementia. Grounds for exclusion included an episode of alcohol or other substance use disorder within the past 12 months, a history of bipolar disorder or a psychotic disorder, and a neurodegenerative disorder.

### Intervention

The healthy dietary practices coaching program comprised 6–8 sessions over a 6–12 week period and semi-annual boosters 3, 9, and 15 months after the treatment phase. The first session lasted 1 hour, and subsequent sessions lasted approximately 30 minutes each. The program was delivered by social workers and mental health nurses trained in our center for depression prevention and treatment. At each session, interventionists reviewed general nutrition guidelines, including the U.S. Department of Agriculture Food Pyramid; helped with preparing weekly menus and grocery lists and saving food coupons; and reviewed food intake since last visit. Topics discussed included

access to healthy food, cost of food, meal preparation, culturally specific and acceptable foods, and specific dietary topics raised by participants. Participants received coaching to address the challenges of implementing healthy dietary practices. Homework assignments were given to encourage and monitor adherence. See the data supplement that accompanies the online edition of this

article for a detailed description of the steps involved in implementing the dietary coaching program.

### Results

The participants' mean age was 65.59 years (SD=10.95), and 71% were women. The mean baseline CES-D score was 21.15 (SD=7.91). Ninety-five participants (77.9%) in the dietary coaching arm completed the 2-year study. Reasons for dropout included respondent burden (15.6%), worsened cognitive function (3.3%), and death (3.3%). Ten of the 95 participants (10.5%) experienced onset of major depression. The strongest predictors of incident episodes were greater cumulative medical comorbidity, lower mental health-related quality of life, and greater baseline severity of depressive symptoms. Participants in the dietary coaching arm also experienced a 40%–50% improvement in depressive symptoms, with the mean Beck Depression Inventory (27) score decreasing from 9.92 (SD=5.51) at baseline to 5.93 (SD=4.94) after treatment, and the improvements were sustained over 2 years. (Participants in both arms of the study showed similar sustained improvements in symptom burden [depression and

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*Lifestyle interventions that are culturally sensitive may help reduce the disparities in mental health service use among our increasingly diverse older population.*

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anxiety), quality of life, coping [problem-solving orientation], and body mass index.)

For Ms. J, her difficulty consuming healthy foods containing low-fat, low-calorie, and whole-grain contents were discussed, and she was encouraged throughout the intervention to use the “Rate Your Plate” diary to track her food patterns. Ms. J’s BDI score remained at 13 or 14 during most of the dietary coaching program, but she reported an improvement in depressive symptoms throughout the follow-up period despite a recurrence of her leukemia. During her leukemia treatment, she continued to work to find ways to improve the quality of her food choices. She did not experience onset of major depression. Although Ms. J’s BMI was high at the end of the dietary coaching program (at 32.28;  $\geq 30$  is considered obese), it had improved 2.5 points from baseline.

### Dietary Coaching and Other Evidence-Based Interventions for Preventing Major Depression

Dietary coaching protected older adults for 2 years from the effects of subsyndromal depressive symptoms on incident episodes of major depression and persistence of depressive symptoms. We caution that our trial does not provide direct evidence of efficacy; the efficacy of the dietary coaching program is inferred on the basis of rates of incident major depression from other studies (12). That said, BDI scores decreased, on average, from 9.92 before the intervention to 5.93 after the intervention. We also observed improvement in physical- and mental-health-related quality of life, with postintervention scores on the SF-12 healthy survey (28) increasing by 3 and 4 points, respectively. The dietary coaching program was also acceptable to older blacks and whites, with high rates of adherence over 2 years. For Ms. J, she felt less depressed even while undergoing active treatment for chronic lymphoid leukemia. Her BDI scores continued to decrease over the 2-year study period as she worked to find ways to control her portion size and increase her appetite for higher-nutrition foods.

Several randomized controlled trials have supported the feasibility and efficacy of indicated prevention in at-risk older adults. For example, in a Dutch study of older primary care patients with subthreshold symptoms of depression and anxiety (29), an indicated intervention (which included problem-solving therapy) reduced the incidence of depressive and anxiety disorders by half over 1 year relative to usual care (24% compared with 12%). A similar result was reported in the MANAS trial (25% compared with 12.3%) in a mixed-aged Indian sample (30). In addition to reducing the incidence of major depression, the Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT) aimed to protect older adults from suicide, a critical downstream consequence of depression. A reduction in suicidal ideation over 2 years

among older adults with subsyndromal depression was observed (25%–30% to 10%–15%) (31–33). Our data showed an incidence of major depression of 8.5% over 2 years and 5.3% over 1 year (whole trial), similar to the Dutch and Indian observations. Compared with previously published rates of incident major depression in persons with subsyndromal symptoms not receiving any intervention (20%–25% over 1 year) (12, 25–28), the apparent protective effect of the dietary coaching program is noteworthy.

The dietary coaching program’s protective effect in reducing symptom burden points to lifestyle modification as a promising strategy for indicated prevention of major depression in older adults. The program was conducted in a community setting, and it was safe for and acceptable to older adults. Even more encouraging is a protective effect in a racially heterogeneous sample of high-risk patients. The program was also easy to implement; face-to-face contact with interventionists was approximately 5.5 hours over 2 years. We acknowledge that clinical and psychosocial changes may also have influenced depressive symptoms, and we recommend that future investigations evaluate the extent to which patient characteristics influence the intervention’s effectiveness. We also recognize that acceptability may be lower among subgroups of older patients who prefer pharmacotherapy over behavior change therapy.

### Underlying Mechanisms of the Possible Protective Effects of Dietary Coaching

There are several possible reasons why dietary coaching might have a protective effect against incident episodes of major depression in at-risk older adults. First, the dietary coaching program provided more than a control for the face-to-face contact that is inherent in problem-solving therapy. The program was a focused approach to a particular problem. It used counseling strategies such as goal-setting and empathetic listening to improve dietary behaviors. Therefore, the program’s active-coping component, as well as the social contact it entailed, may have protected against depression. Teaching active-coping skills diminishes a sense of helplessness, which is a core feature of depression. Similarly, teaching strategies for better health behaviors improves health-specific self-efficacy, a strong predictor of health behavior change and maintenance (34). Thus, implementing a skills-enhancing model of prevention together with targeting health behaviors associated with positive affect may have potentiated the program’s apparent preventive effects. Second, changes in dietary behaviors may have led to the increased consumption of certain nutrients (omega-3 fatty acids and B vitamins) and amino acids (tryptophan, tyrosine, and phenylalanine) that have been associated with a lower risk of developing depression (35, 36). There is evidence to suggest that deficiencies in omega-3s and B vitamins (particularly B<sub>9</sub> [folate]

and B<sub>12</sub>) lead to disturbances in neural function and brain metabolic processes, with depression symptoms a common manifestation of these deficiencies (37–39). Third, the dietary coaching program was not stigmatizing. Participants were helped in solving a problem associated with managing dietary health behaviors. With the higher positive problem-solving orientation (active coping) of blacks in the sample, including Ms. J, dietary coaching fit culturally with her personal life experiences of having to problem solve/cope even in the absence of extensive resources. The program did not pose the issues of safety, stigma, and financial burden associated with long-term antidepressant pharmacotherapy. As a result, participant burden was low and adherence was high.

## Treatment Considerations

Mildly depressed patients are an important group to target for indicated prevention. Preventing incident episodes of major depressive disorder is critical for reducing the physical and emotional burden of late-life depression and promoting an enhanced quality of life. Based on our clinical experience and research findings, we offer the following recommendations for introducing lifestyle modification for the prevention of major depression in at-risk older adults with subsyndromal depression.

1. Include lifestyle modification programs such as coaching in healthy dietary practices as an experimental arm in a randomized controlled trial. In order to build the evidence base for lifestyle modification as indicated prevention, safety and efficacy data must be collected from clinical trials. As a general approach to depression-prevention randomized controlled trials, we also recommend allowing for some tailoring of the delivery of the intervention, following patients for longer periods (2 years), and recruiting study groups of sufficient racial or ethnic diversity to examine variability related to sociocultural characteristics.

2. In addition to dietary behaviors, there are other lifestyle approaches that may help prevent depression in older adults. Physical inactivity and poor sleep are predictors of major depression, and both are prevalent during later life. Physical activity and good sleep practices are modifiable behaviors that independently regulate mood, relieve stress, and are essential for cognitive functioning (40–42). Teaching older adults how to maintain regular physical activity and sleep habits should be a target for promoting mental health. However, what is unknown is whether improving physical activity or sleep quality prevents incident episodes of major depression in at-risk older adults. We strongly advocate research that can examine what aspect of physical activity (intensity, duration) or sleep (total sleep time, quality) is most critical to target. We must also test whether a multifaceted lifestyle intervention that promotes healthy dietary, physical activity, and sleep behaviors produces more favorable

effects than interventions targeting any one behavior alone.

3. There may be an important synergy between skill-enhancing interventions and those that promote healthy lifestyles. This interaction, which is particularly relevant for at-risk older adults, may be optimal in eliciting behavior changes and corresponding reductions in depressive symptoms. Problem-solving therapy, a skills-enhancing intervention, has been used in depression prevention studies successfully and could easily be amended to include lifestyle modification (8, 10, 29, 43). Our dietary coaching program could be considered a type of problem-solving therapy, in that it is a focused approach to a specific behavioral problem. We believe that physical activity and sleep interventions could easily incorporate a problem-solving therapy approach. Intervention strategies that simultaneously treat depression and focus on the maintenance of healthy lifestyles may achieve the best health outcomes, in terms of preempting incident episodes of major depression and its associated burdens. Practically, a problem-solving therapy/healthy lifestyle intervention is applicable in multiple settings and deliverable by general medical clinicians. Key elements of this joint intervention would include 1) individual sessions with a problem-solving therapy-trained health counselor, weekly for at least 8 weeks; 2) identification of an attainable health-related goal (e.g., eating a more nutrient-dense diet, exercising 150 minutes/week, implementing a regular sleep schedule); 3) development of a plan to overcome barriers to enacting the lifestyle changes necessary to achieve this goal (e.g., bodily pain, limited social support, diminished motivation); and 4) development of a method for measuring and monitoring adherence (e.g., daily diary, objective monitoring device).

4. Intervene with the marital partner or significant other as well as with the patient. Older spouses tend to engage in similar health behaviors, which could be either health promoting or health damaging. When faced with a health-related stressor, spouses become a tremendous source of support (44). Lifestyle modification may be challenging if a patient's marital partner is not included in treatment. Lack of patient progress may be explained by unsupportive partner behaviors such as lack of support for the patient's behavioral changes to their shared daily lifestyle (45). A dyadic intervention that focuses on marital functioning, such as effective support seeking, would greatly enhance our understanding of the role of marriage in depression prevention.

## Conclusions

Given the current state of major depression treatment efficiency, continued identification of effective prevention strategies is important for both clinical practice and health policy. Whether an indicated lifestyle intervention could prevent incident episodes of major depression and the

downstream consequences of major depression in at-risk older adults is not clear, given the limited evidence. However, the case can be made that lifestyle modification should at least be considered a favorable option for indicated prevention, and future clinical trials are warranted. We may find that lifestyle interventions like coaching in healthy dietary practices are effective for reducing the burden of depression in at-risk older adults. To address questions of intervention efficacy, the field should seek to understand risk reduction strategies using the lifestyle modification strategies discussed here.

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Received Oct. 7, 2013; revision received Dec. 20, 2013; accepted Dec. 30, 2013 (doi: 10.1176/appi.ajp.2013.13101373). From the NIMH Center for Late Life Depression Prevention and Treatment, University of Pittsburgh School of Medicine and Graduate School of Public Health, Pittsburgh; and the University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh. Address correspondence to Dr. Reynolds (reynoldscf@upmc.edu).

Dr. Reynolds has received pharmaceutical support for NIH-sponsored research studies from Bristol-Myers Squibb, Eli Lilly, Forest, and Pfizer; grants from NIMH, the National Institute on Aging, the National Center for Minority Health Disparities, the National Heart, Lung, and Blood Institute, the Centers for Medicare and Medicaid Services, the Patient-Centered Outcomes Research Institute, the Commonwealth of Pennsylvania, the John A. Hartford Foundation, the National Palliative Care Research Center, the Clinical and Translational Science Institute, and the American Foundation for Suicide Prevention; and a speaking honorarium from Medscape/WebMD; he has also received licensing fees for psychometric analysis of the Pittsburgh Sleep Quality Index (PRO10050447). The other authors report no financial relationships with commercial interests.

Supported in part by NIH grants P30 MH090333, P60 MD000207, MHO19986, NR009573, NR013450, R01 NR012459, CDC U48 DP001918, UL1RR024153, UL1TR000000, 5AG026010, and AG032370; by National Science Foundation grant 0540865; and by the University of Pittsburgh Medical Center Endowment in Geriatric Psychiatry.

Clinicaltrials.gov identifier: NCT00326677.

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### **Clinical Guidance: Dietary Coaching to Prevent Depression in Older Adults**

A program of education and coaching in healthy dietary practices may reduce subsyndromal depressive symptoms and prevent escalation to major depression in older adults. In a trial of another psychological intervention, Stahl et al. used dietary coaching as a comparison treatment and found that it improved symptoms 40%–50%. Eight initial sessions plus semiannual boosters led to sustained improvement over 2 years. Lifestyle interventions enhance self-management and coping skills, are not stigmatizing, and may benefit overweight patients. Dietary changes themselves may also lower the risk of major depression, through increased consumption of omega-3 fatty acids, B vitamins, and amino acids.