Effect of Online Continuing Medical Education in Major Depression: Focus on Neurobiology, Assessment, and Treatment

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Study Objectives

Major depressive disorder (MDD) is the most prevalent mental disorder in the United States, causing significant patient disability and caregiver burden, and requiring extensive utilization of healthcare resources.[1] However, care of patients with MDD is suboptimal, partly due to clinicians' lack of knowledge and confidence in properly assessing MDD, selecting appropriate first-line and secondary therapies, and monitoring patients' response to treatment.

In addition, there are challenges in care coordination and communication among the entire healthcare team that manages a patient with MDD.[2] This study assessed the effects of an online continuing medical education (CME) curriculum on improving the clinical competence and performance of psychiatrists and primary care physicians (PCPs) who provide care for adults with MDD.[3-5]

Instructional Method

PCPs and psychiatrists participated in at least 1 to 3 online CME activities on various topics in MDD including the neurobiology of receptors, their pharmacologic targets, and how this relates to the management of symptoms; the management of difficult cases of MDD involving patients with cognitive or sleep issues; and perspectives on managing cognitive deficits in patients with MDD to improve their quality of life. The activities included:

1. **Matching Symptoms and Receptor Binding Profiles in Depression: Focus on 5-HT Receptors**, a video-lecture focusing on matching symptoms of MDD to specific receptors to rationalize therapy selection: *www.medscape.org/viewarticle/833637* [3]
2. **Case Considerations in MDD Treatment: Focus on Cognition and Sleep**, a case-based challenge focusing on the management of residual MDD symptoms: *www.medscape.org/viewarticle/832096* [4]
3. **Cognition in Major Depressive Disorder: Improving Quality of Life**, an expert panel discussion focusing on managing cognition in patients with MDD: *www.medscape.org/viewarticle/836400* [5]

Assessment Methods

- Measurement of the effectiveness of each of the online CME programs was assessed via the administration of online surveys.
- Linked participants (ie, the learners), who served as their own controls, were pre-assessed with a set of 3 to 4 performance questions before exposure to CME.
- The effectiveness of knowledge transfer/exchange was evaluated immediately after CME (post-assessment) and again in 30 to 60 days on a smaller subset of linked learners, defined as pre-follow up (ie, initial results of the smaller sample immediately post-CME to follow-up 30 to 60 days after CME).
- Statistical significance (P <.05) was calculated using McNemar's chi-squared tests.
- Cramer's V was used to calculate the effect size of each of the educational interventions based on the strength of association between the pre- and post-CME performance. Effect sizes (V) range from 0 to 1, and values closer to 0 indicate less similarity in the responses chosen for each assessment compared with those chosen for the next assessment (pre- to post-, and post- to follow-up). For example, values of 0.01 to 0.34 indicate a robust effect, values from 0.35 to 0.69 indicate a moderate effect, values from 0.70 to 0.99 indicate a modest effect, and a value of 1.00 indicates no effect.
- For this study, questions from each activity were analyzed by MDD themes including neurobiology and therapeutic mechanisms, assessment, and treatment of residual symptoms.
- The activities were launched between 10/28/14 and 12/22/2014, and data were collected for 105 days.[3-5]

Results

Results of individual activities:

Competence and performance of PCPs and psychiatrists improved after each CME activity, with robust effect sizes as follows:

- V = .199 for PCPs (n=222) participating in ***"Matching Symptoms and Receptor Binding Profiles in Depression: Focus on 5-HT Receptors"*** [3]
- V = .298 for PCPs (n=764) and V = .289 for psychiatrists (n=1661) participating in ***"Case Considerations in MDD Treatment: Focus on Cognition and Sleep"*** [4]
- V = .272 for PCPs (n=284) and V = .28 for psychiatrists (n=423) participating in ***"Cognition in Major Depressive Disorder: Improving Quality of Life."*** [5]

Analysis by MDD themes:

- On average, PCPs improved by 26% (n=444 total answers; P < .05) post-CME on MDD neurobiology/therapeutic mechanisms, with no significant loss of performance on follow-up in a smaller subset of learners (n=34) (P >.05) [Figure 1].
- On average, PCPs performed 28% better (n=1048 total answers; P <.05) and psychiatrists performed 39% better (n=2084 total answers; P <.05) post-CME on using MDD tools/scales, with a small loss of retention on administration of self-rating scales in a smaller sample of PCPs (n=46; P <.05) and psychiatrists (n=101; P <.05) [Figures 2 to 4].
- Post-CME, PCPs (n=284) and psychiatrists (n=423) improved 57% and 36%, respectively, on treating cognitive deficits of MDD (P <.05), and 47% of a smaller PCP sample (n=36) retained performance on follow-up [Figure 5].

FIGURE 1 SELECTED QUESTIONS FOR THE THEME OF KNOWLEDGE OF RECEPTORS AND NEUROTRANSMITTERS IN THE CONTEXT OF MDD PATHOPHYSIOLOGY AND THERAPY SELECTION

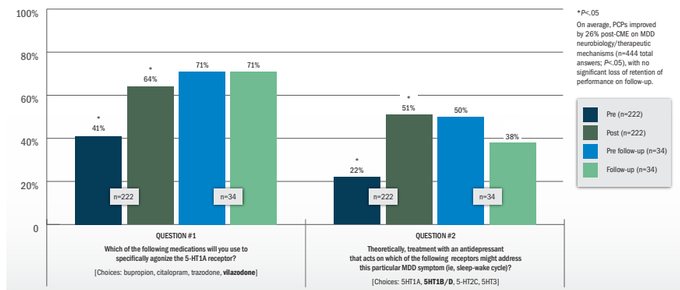


FIGURE 2 CASE SCENARIOS FOR FIGURES 3, 4, & 5

Case Scenario: Scott is a 40-year old married man with a history of depression for about 12 to 14 years. He was previously treated with fluoxetine but was not treated to remission. However, Scott discontinued treatment and has not been on antidepressant medication for the past 2 years. He presents to his PCP with constant feelings of tiredness, sadness, an inability to function well, and feeling as if everything is a burden. He complains about difficulties with concentration that are affecting his ability to function at work. He has occasional crying spells, avoids social activities, and reports feeling worthless and helpless. These feelings have persisted for at least 6 months but have gotten increasingly worse in the past 2 months.

Scott has no significant alcohol or drug use, and no tobacco use. He has gained some weight over the past few months. He has a history of hypertension (stable), is not diabetic, and has no chronic medical illnesses.

Case Scenario: JK is a 43-year-old man who comes to your office complaining of sadness, tiredness, and poor sleep. He has withdrawn from his friends and often feels like he is just going through the motions in his daily life. Although he still watches football, he doesn't enjoy it the way he used to. JK feels overwhelmed by ordinary tasks such as paying bills or dealing with health insurance paperwork. At work, JK has been unfocused, forgetful, and for the first time he is having trouble meeting deadlines. His manager has expressed concerns about his performance. JK completes the Patient Health Questionnaire-9 (PHQ-9) in the waiting room and has a score of 14. After a clinical interview, you diagnose him with MDD.

FIGURE 3 SELECTED QUESTIONS FOR THE THEME OF UTILIZING TOOLS/SCALES TO ASSESS DEPRESSION AND RESIDUAL SYMPTOMS (EG, COGNITIVE AND/OR SLEEP ISSUES) FOR PCPS

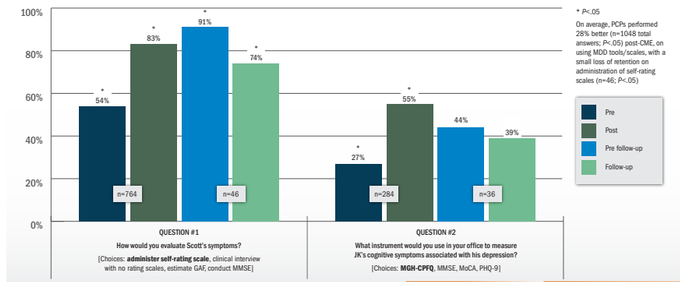


FIGURE 4 SELECTED QUESTIONS FOR THE THEME OF UTILIZING TOOLS/SCALES TO ASSESS DEPRESSION AND RESIDUAL SYMPTOMS (EG, COGNITIVE AND/OR SLEEP ISSUES) FOR PSYCHIATRISTS

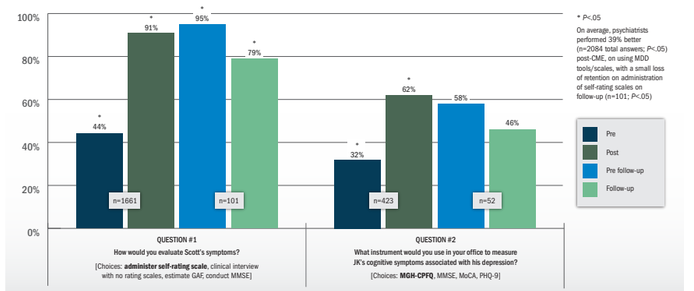
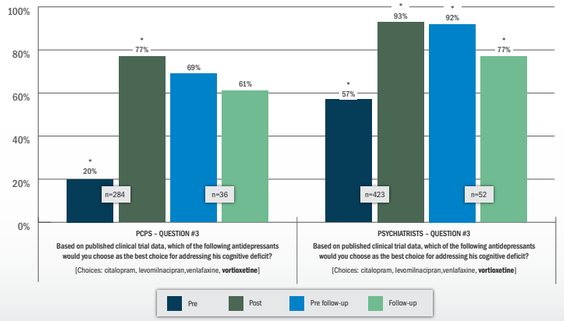


FIGURE 5 SELECTED QUESTIONS FOR THE THEME OF TREATING RESIDUAL SYMPTOMS OF MDD (EG, COGNITIVE DEFICITS) FOR PCPS AND PSYCHIATRISTS

Case scenario from Figure 2 continued: You prescribe an SSRI and 8 weeks later JK's PHQ-9 score has declined to 7. Despite the improvement in his symptoms of depression, he still has significant impairment in cognition. Note: There is no antidepressant that is approved by the FDA for the treatment of cognitive impairment in patients with major depression.

* P<.05

Post-CME, PCPs (n=284) and psychiatrists (n=423) improved 57% and 36%, respectively, on treating cognitive deficits of MDD (P<0.05), and 47% of a smaller PCP sample (n=36) retained performance on follow-up, while 23% of a smaller psychiatrist sample (n=52; P<0.05) lacked retention on follow-up.



Conclusions

An online CME curriculum was effective in improving evidence-based decisions of PCPs and psychiatrists treating MDD, with potential implications for clinical practice. Clinicians would benefit from additional tailored education on monitoring and assessment, strategies for managing residual symptoms, and managing difficult-to-treat MDD to drive knowledge transfer and retention with the overarching aim of improving health outcomes in patients with depression.

Reference Reviewed

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