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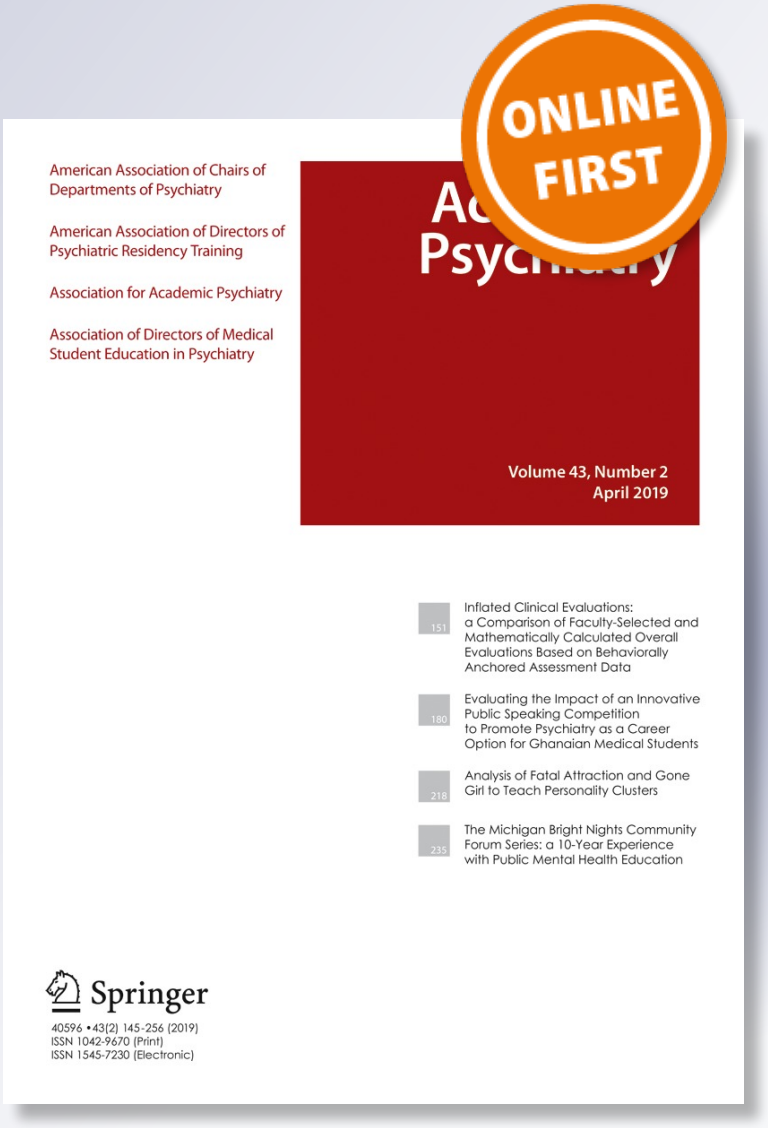

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IN BRIEF REPORT

Videoconferencing Technology to Facilitate a Pilot Training Course in Advanced Psychopharmacology for Psychiatrists

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Abstract

Objective Psychopharmacology requires practitioners to continually upgrade knowledge and skills, but attendance at live continuing medical education events presents many barriers. In addition, technology has generated new learning approaches. In response, a videoconference-based course on psychopharmacology was developed and evaluated for feasibility and acceptability. Specific goals included whether learners would engage and whether the technology would work well for both learners and instructors. Additional aims included providing guideline-concordant psychopharmacology training, enhancing patient safety, and fostering case discussion.

Methods The course used BlueJeans® videoconferencing technology. Each of the six weekly sessions was taught by a facilitator and a speaker. Every class incorporated a 1-h interactive didactic presentation, followed by 1 h for case reviews. Topics included six major psychiatric disorders, managing key drug interactions, and pharmacogenomics. Three types of online self-report evaluations were conducted—individual session evaluation, overall evaluation, and faculty speaker evaluation.

Results Nineteen participants enrolled, with 85% of respondents reporting course objectives were met as "very good" or "excellent." Moreover, 92% of respondents rated the course as "very good" or "excellent." Sixty percent of the faculty were "somewhat satisfied" and 40% were "extremely satisfied" with the videoconferencing tool. Qualitative responses from both participants and faculty were positive overall.

Conclusions This course provides preliminary evidence that an online, live longitudinal course in psychopharmacology is both acceptable and effective, both for CME learners and teachers. The authors plan to disseminate this model of CME to other institutions while extending the reach of the present course to more diverse practitioners.

Keywords Psychopharmacology · Videoconferencing technology · CME · Patient safety · Drug interaction

More than 43 million American adults—approximately 20% of the population—experience mental illness in a given year [1], with depression now reported as the leading cause of ill health and disability worldwide [2]. As a reflection of this, the demand for psychiatric services has sharply increased along with the prescribing of psychotropic medications [3]. Keeping practitioners that are responsible for psychotropic management up-to-date on psychopharmacology knowledge is, therefore, a priority. A key way to do so is through high quality, readily accessible continuing medical education (CME). However, live CME at academic centers often presents barriers due to cost, accessibility, and time pressures. One solution has been to develop pre-recorded online CME modules. While they offer schedule flexibility, these modules lack direct interaction with the instructor and create a monolog instead of a dialog form of learning, prompting consideration of instructor-led online live course sessions. Web-based videoconferencing technology has successfully been used to enhance clinical supervision and training [4], psychiatry resident training [5, 6], telepsychiatry/telemental health care practices [7], as well as CME course instruction [8–10], which is the focus of this article. Employing videoconferencing technology to teach CME material has been shown to be a feasible, cost-effective, convenient, accessible, and flexible solution to providing ongoing professional training to many, but little has been studied in psychiatry [8–10].

Here, we describe the feasibility and acceptability of a videoconference course on psychopharmacology, developed for psychiatrists. Specifically, we were interested in whether individuals would sign up for the course and whether the

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technology would work well for both learners and instructors. We enlisted this e-learning approach because it is scalable and able to provide access to rural or remote clinicians. The present course was inspired by a similar in-person course created and taught by the principal investigator in Canada, which won a national award for excellence and was consistently sold out over a 10-year period. The current version, run in the USA, was developed to provide psychopharmacology training for psychiatrists from across Michigan. Additional aims of the course were to provide high-quality psychopharmacology training of major psychiatric disorders, enhance patient safety by emphasizing tools and approaches that minimize harmful drug interactions, and foster case discussion and practical experience. Finally, we intended this course as a pilot to guide us in the design of future e-psychopharmacology courses.

Methods

Funding was obtained by a CME Innovations Grant through the University of Michigan Medical School. We built the course around BlueJeans® conferencing technology, a cloud-based HIPAA-compliant audio/video/content sharing conferencing service [11]. BlueJeans® is currently available free of charge for faculty and staff at the University of Michigan and allows for cost-effectiveness, flexibility, and national and international access. The technology offers access of up to 100 endpoints (e.g., a room telepresence system, laptop, tablet, or smartphone) to connect for a course. BlueJeans® supports high-resolution videoconferencing (720p), high-resolution content sharing (up to 1080p), and real-time video sharing. For archival purposes, courses can be recorded, downloaded, and stored. The course instructors registered for a BlueJeans® user account to schedule, host, and moderate the course; participants were not required to create an account.

We advertised via our Department of Psychiatry email list, which includes primary care physicians, nurse practitioners, and pharmacists. Other advertising avenues included a state telepsychiatry program with outreach to primary care practices and a state psychiatric society. Consistent with standard CME procedures, individuals had to register, commit to attending the course and not just occasional sessions, complete weekly needs surveys as well as outcome questionnaires, and pay a registration fee. Course format and content were determined by (1) needs survey results from prior projects; (2) prevalence of disorders (i.e., disorders with high prevalence rates, such as depression and anxiety, were included); (3) our academic expertise in mood and anxiety disorders. The format consisted of six, weekly 2-h evening sessions (6:30–8:30 p.m.), facilitated by a two-person team and taught by five faculty speakers from the Departments of Psychiatry and Pharmacy. Based on needs survey results and research demonstrating the effectiveness of interactive CME sessions that enhance participant activity and provide the opportunity to practice skills [12], the session format consisted of an initial interactive didactic hour, followed by a second hour geared towards case reviews, primarily from participants' cases. Six major psychiatric disorders were covered: refractory major depression, bipolar disorder, post-traumatic stress disorder (PTSD), obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), and social phobia (the latter two taught in the same session), along with managing key drug interactions and pharmacogenomics as a final session. For each illness, key medication treatments drawn from relevant treatment guidelines were emphasized. Teaching covered reviews of the level of evidence associated with each recommendation; tips on initiation, monitoring, and tapering of the medication; use of combination pharmacotherapy; relevant laboratory tests; side effect monitoring; and key drug interactions. Participants could ask questions orally or via a live chat feature. At the start of each session, participants were asked about challenges in applying knowledge from the previous class.

From a feasibility and acceptability perspective, we recorded registration numbers, types of attendees by professional background, attendance, and attendee as well as faculty satisfaction with the technology. For additional course evaluation, we relied on a simplified model based on the first two of Dixon's four levels of CME evaluation, namely satisfaction and knowledge and skill acquisition [13]. Three types of self-report evaluations were conducted online via Qualtrics [14]—individual session evaluation, overall evaluation, and faculty speaker evaluation. First, after each session, a 10-item satisfaction questionnaire was administered to participants. Items were rated with a 5-point Likert scale from 1 "poor" to 5 "excellent." Second, a 24-item course evaluation survey was administered to participants at the conclusion of the course. This survey was comprised of five major evaluation domains: satisfaction (7 items), technology (2 items), impact (9 items), attendance (3 items), and demographics (2 items). For the first 10 questions, which evaluated course content, teaching methods, and the videoconferencing tool, responses were measured on a scale from 1 "poor" to 5 "excellent." Based on the article by Parker and Parikh (2001) [15], which discusses the application of Prochaska's model of change to outcome measurement, questions 13 to 18 asked participants to appraise their own skill to determine whether the course confirmed, improved (slightly, moderately, greatly), or made no difference in their psychopharmacology knowledge and skills on a 1–5 scale. The "confirmed" response category was included as a way for participants to confirm that they were already using best-practice psychopharmacology approaches in their work. Third, following the course, an 8-item questionnaire was administered to faculty speakers to evaluate satisfaction with the technology and teaching format.

Results

A total of 19 participants from across Michigan enrolled in the course from September through November 2016. While we primarily advertised to psychiatrists, six participants were psychiatrists (32%) and 13 (68%) came from different professional backgrounds: family physician (32%), nurse/nurse practitioner (20%), pharmacist (5%), and other (11%).

Evaluation of Individual Sessions by Attendees

Each questionnaire asked respondents to separately rate the primary speaker and facilitator on the clarity of presentation, relevance to practice, and quality of content. Next, respondents were asked to rate whether course objectives were met, the potential impact on their practice or research, the utility of tools or resources suggested, the opportunity to ask questions, and the avoidance of bias. Lastly, the questionnaire asked participants for a global course session rating as well as comments. Overall, course participants rated the bipolar disorder session a 4.22 ($N = 9$), the drug interactions and pharmacogenomics session a 4.5 ($N = 4$), the GAD and social phobia session a 4.71 ($N = 7$), the OCD session a 4.33 ($N = 3$), the PTSD session a 4.2 ($N = 5$), and the refractory major depression session a 4.25 ($N = 4$). Individual scores for other items on the survey were similarly highly rated with only four items total across all session surveys receiving below a rating of 3.

Evaluation of Overall Course by Attendees

Thirteen participants (68%) completed the overall course evaluation survey, attending a mean of 3.77 sessions, with 69% attending at least four of the six sessions. Key evaluation results are presented in Table 1.

Over half (54%) of respondents endorsed the BlueJeans® videoconferencing tool as "excellent" in terms of its ease of use. About 62% of respondents felt the meeting support and organization of the course was "excellent."

Eighty-five percent of respondents reported the degree to which course objectives were met as "very good" or "excellent," and gave high ratings for both lectures and case discussions. Finally, 92% of respondents rated the course as "very good" or "excellent." The potential impact of the course on respondents' practice or research yielded a mean rating of 4.08. Approximately 9% of participants indicated that their knowledge and skills were confirmed across the six session topics.

Course participants were also asked three qualitative questions. The first question examined whether they intended to change their practice or work as a result of the course. If so, the second question examined what change they will make. One participant said they will be more likely to try different second-line drugs that they had not previously felt comfortable using. Four participants noted that they will be more likely to follow guidelines such as CANMAT [16]. When asked to share suggestions and comments, one participant said he "liked being able to do [the course] from home" and the coordinators should "consider emailing the presentations and handouts out to group so it would be easier to access than just through [the] BlueJeans® app," which was done.

Evaluation of Course Technology and Format by Faculty Speakers

All five faculty speakers completed the faculty speaker evaluation. Overall, 60% of the faculty were "somewhat satisfied" and 40% were "extremely satisfied" with the BlueJeans® videoconferencing tool. Forty percent reported the ease of use of the tool as "good" and 60% reported it as "very good." Twenty percent somewhat liked the availability of live chat commentary exchanges on the side-bar during their presentations and 60% liked it a lot. Table 2 presents an overview of the mean item scores and percentages for faculty speaker quantitative evaluation survey items. Faculty were asked to describe their overall experience with teaching via the BlueJeans® technology and to share any additional suggestions or feedback. One speaker said, "It was a bit unusual in the beginning to be speaking without getting 'facial' feedback to judge the listeners interests and level/or of alertness, but once I got going, it felt fine." Another speaker noted that "It was very helpful to have individuals onsite to assist with setup and with any questions I had, including the moderator and tech support." The speakers generally felt that the technology was intuitive.

Discussion

Providing more psychopharmacology training, in ways that are both educationally effective and accessible to more practitioners, is essential to improving mental health outcomes. While traditional CME has focused on live teaching events, in a recent study on the CME engagement preferences of physicians, 57% of respondents said they were "likely" or "extremely likely" to participate in online courses that offered live feedback, interactive case studies, and individual or small-group problem solving [17]. The vast majority of available advanced training psychopharmacology courses for psychiatrists are in person despite the above findings and data that time intensity of the courses, family obligations, and fatigue are major barriers to the completion of continuing education courses [18]. These barriers are compounded for rural or remote health professionals. In addition, the few online courses available in psychopharmacology do not offer in-depth training that includes the growing number of new pharmaceutical

Table 1 Mean item scores and percentages for overall participant quantitative course evaluation survey items

Instrument domain/item				*N*	Mean
Satisfaction					
Course objectives were met.				13	4.38
How effective is this format of mixing lecture and cases?				13	3.92
Overall rating of lectures alone.				13	4.31
Overall rating of case discussions alone.				13	4.00
Adequate opportunity to ask questions.				13	4.38
Avoided commercial bias or influence.				13	4.85
Overall rating of educational event.				13	4.38
Technology					
Web conferencing tool ease of use.				13	4.31
Meeting support and organization.				13	4.46
Impact					
Potential impact on your practice or research.				13	4.08
Please rate the impact of this course on your psychopharmacology knowledge and skills for:				% reporting moderate or great improvement	
Depression				77%	
Bipolar disorder				85%	
PTSD				41%	
OCD				58%	
GAD and social phobia				42%	
Drug interactions				50%	
Attendance					
Please indicate the number of sessions you attended.				13	3.77
If you missed a session, did you watch the recorded session(s)? *N* = 12					
No	Some	All			
58%	25%	17%			
Would you prefer one session per month rather than one per week? *N* = 13					
Yes	No				
77%	23%				
Demographics					
Please indicate your primary role. *N* = 13					
Clinician	Researcher/basic scientist	Administrator	Student		
85%	8%	0%	8%		
Please indicate your job description *N* = 13 (top 4 displayed)					
Psychiatrist	Family physician	Nurse/nurse practitioner	Pharmacist		
23%	38%	23%	8%		

*Higher scores indicate higher rating (range of scores = 1–5)

agents, new drug indications, monitoring parameters, adverse effects, and guidelines [19–22].

Employing key educational principles and recent advances in technology, as well as changes in the way learners wish to pursue training, we used videoconferencing technology to adapt a previously live course in psychopharmacology for a geographically and professionally diverse audience. Our new course was meant to provide feedback both on the technology from learners and teachers alike, and as a feasibility pilot regarding CME for psychiatrists. The results demonstrate feasibility and provide preliminary evidence of the utility of this course, as well as utility of the technological platform.

One lesson learned involved the interest in the course from other providers. Although advertising was targeted to psychiatrists, few actually enrolled; most were family physicians, nurse practitioners, and resident physicians in psychiatry or family medicine. A key aim was to understand how well the videoconferencing approach worked for this type of CME program. Participant and speaker feedback demonstrate that BlueJeans® conferencing technology provides a feasible,

Table 2 Mean item scores and percentages for faculty speaker quantitative course evaluation survey items

Item	*N*	Mean
Overall, how satisfied were you with the BlueJeans® videoconferencing tool?	5	4.4
Ease of use of the BlueJeans® videoconferencing tool.	5	3.6
Use of side-bar conversations/commentary exchanges/live chat during your presentation.	5	4.4
How much did you have to modify the content of your course material due to the fact that this course was run remotely vs. face-to-face?	5	1.8
How comfortable did you feel teaching a course without participants physically present (in comparison to a traditional face-to-face course)?	5	4.4
Prior to this course, had you previously taught via videoconferencing technology? *N* = 5		
Yes	No	
40%	60%	

*Higher scores indicate higher levels of satisfaction, comfort, etc. (range of scores = 1–5)

practical, and cost-effective means of delivering advanced psychopharmacology CME content. Both groups found the technology easy to use and considered the fact that the technology did not force the user to download any software on their computer important. In fact, according to feedback obtained during the course, participants and speakers with prior experience with online teaching platforms that offer interactive sessions found BlueJeans® easier to use. Survey results also support the interactive and mixed-methods format, teaching style, and technology approach of the course as being appropriate to use in future courses. Moreover, results demonstrate that this format is highly satisfying to learners and is an effective teaching approach, even with such a blend of learners.

Existing systematic reviews on the effectiveness of CME indicate that activities that are more interactive, use more methods and are focused on outcomes that physicians consider important, lead to more positive outcomes [23]. These features were present in this course. Participants asked questions either orally or via live chat, the course involved interactive teaching combined with case-based discussion, and each faculty speaker tailored material according to participant needs surveys. Use of both faculty and participant cases allowed for a pragmatic application of the teaching. The weekly format facilitated reflection and feedback on challenges participants experienced in applying material and enabled participants' perceived, unperceived, and emergent needs to be addressed. Testing learning in actual practice and then discussing it in a subsequent class allowed implementation of higher principles of quality education and contributed to the high appraisal of impact of the course on practice. Best practices espoused in treatment guidelines were emphasized, with material not only covering key pharmacology principles but also broader therapeutic practices, including an emphasis on close monitoring, heightened attention to safety and side effect concerns, and long-term follow-up. Our course overcame most of the challenges of traditional CME practices while simultaneously appealing to younger clinicians who may simply have a preference for online learning [24].

This course provides preliminary evidence that an online, live longitudinal course in psychopharmacology is both acceptable and effective both for CME learners and teachers. Based on participant feedback, the videoconferencing technology used in this course was viewed favorably, and we have identified key aspects of the technology that contributed to its popularity. We also found that while relatively few psychiatrists signed up, many other health professionals did—mimicking the reality of psychopharmacology prescribing in the USA, where the vast majority of prescribing of psychiatric medications is done by non-psychiatrists. The multidisciplinary audience learned well together. As a direct result of this pilot, we subsequently obtained external grant support to provide psychopharmacology training for primary care providers, particularly targeting nurse practitioners. Also, as a member of the National Network of Depression Centers, a non-profit consortium of 26 US universities with major mood disorder programs, we anticipate disseminating this model of interactive, online, and longitudinal CME to other institutions, while extending the reach of our own course to more diverse practitioners and also to rural and remote psychopharmacology providers.

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Compliance with Ethical Standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Ethical Considerations Based on the information provided, the proposed study does not fit the definition of human subjects research requiring IRB approval (per 45 CFR 46, 21 CFR 56) because in this case, it is the activities or procedures rather than human subjects that are the object of the study.

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References

1. Substance Abuse and Mental Health Services Administration. Results from the 2016 National Survey on Drug Use and Health: detailed tables. Center for Behavioral Health Statistics and Quality: Rockville; 2017.
2. Depression and other common mental disorders: global health estimates. World Health Organization: Geneva; 2017.
3. Olfson M, Blanco C, Wang S, Laje G, Correll CU. National trends in the mental health care of children, adolescents, and adults by office-based physicians. JAMA Psychiatry. 2014;71(1):81–90.
4. Rousmaniere T, Abbass A, Frederickson J, Henning I, Taubner S. Videoconference for psychotherapy training and supervision: two case examples. Am J Psychother. 2014;68(2):231–50.
5. O'Regan K, Marsden P, Sayers G, Morrissey M, Hegarty H, Allen M, et al. Videoconferencing of a national program for residents on evidence-based practice: early performance evaluation. J Am Coll Radiol. 2010;7(2):138–45.
6. Kuhn E, Hugo E. Technology-based blended learning to facilitate psychiatry resident training in prolonged exposure (PE) therapy for PTSD. Acad Psychiatry. 2017;41(1):121–4.
7. Yellowlees PM, Shore J. Telepsychiatry and Health Technologies [Internet]. [cited 2018 Jul 23]. Available from: https://www.appi.org/Telepsychiatry_and_Health_Technologies.
8. Allen M, Sargeant J, Mann K, Fleming M, Premi J. Videoconferencing for practice-based small-group continuing medical education: feasibility, acceptability, effectiveness, and cost. J Contin Educ Heal Prof. 2003;23(1):38–47.
9. Miller PA, Huijbregts M, French E, Taylor D, Reinikka K, Berezny L, et al. Videoconferencing a stroke assessment training workshop: effectiveness, acceptability, and cost. J Contin Educ Heal Prof. 2008;28(4):256–69.
10. Huang K-J, Cen G, Qiu Z-J, Jiang T, Cao J, Fu C-Y. Application of international videoconferences for continuing medical education programs related to laparoscopic surgery. Telemed J E Health. 2014;20(2):157–60.
11. Blue Jeans Network [Internet]. Blue Jeans Network. [cited 2018 Aug 14]. Available from: https://www.bluejeans.com
12. Davis D, O'Brien MA, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? JAMA. 1999;282(9):867–74.
13. Dixon J. Evaluation criteria in studies of continuing education in the health professions: a critical review and a suggested strategy. Eval Health Prof. 1978;1(2):47–65.
14. Snow J, Mann M. Qualtrics survey software: handbook for research professionals. Qualtrics Labs, Inc; 2013.
15. Parker K, Parikh SV. Applying Prochaska's model of change to needs assessment, programme planning and outcome measurement. J Eval Clin Pract. 2001;7(4):365–71.
16. Kennedy SH, Lam RW, McIntyre RS, Tourjman SV, Bhat V, Blier P, et al. Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive disorder: section 3. Pharmacological Treatments. Can J Psychiatr. 2016;61(9):540–60.
17. Salinas GD. Engaging learners in CME in 2016: understanding CME preferences to increase future participation. J Contin Educ Heal Prof. 2016;36(Suppl 1):S46–7.
18. Baxter P, DiCenso A, Donald F, Martin-Misener R, Opsteen J, Chambers T. Continuing education for primary health care nurse practitioners in Ontario, Canada. Nurse Educ Today. 2013;33(4):353–7.
19. Bauer M, Severus E, Köhler S, Whybrow PC, Angst J, Möller H-J, et al. World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for biological treatment of unipolar depressive disorders. Part 2: maintenance treatment of major depressive disorder-update 2015. World J Biol Psychiatry. 2015;16(2):76–95.
20. Cleare A, Pariante CM, Young AH, Anderson IM, Christmas D, Cowen PJ, et al. Evidence-based guidelines for treating depressive disorders with antidepressants: a revision of the 2008 British Association for Psychopharmacology guidelines. J Psychopharmacol. 2015;29(5):459–525.
21. Malhi GS, Bassett D, Boyce P, Bryant R, Fitzgerald PB, Fritz K, et al. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders. Aust N Z J Psychiatry. 2015;49(12):1087–206.
22. Qaseem A, Barry MJ, Kansagara D. Clinical guidelines committee of the American College of Physicians. Nonpharmacologic versus pharmacologic treatment of adult patients with major depressive disorder: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2016;164(5):350–9.
23. Cervero RM, Gaines JK. The impact of CME on physician performance and patient health outcomes: an updated synthesis of systematic reviews. J Contin Educ Heal Prof. 2015;35(2):131–8.
24. Sandars J, Walsh K, Homer M. High users of online continuing medical education: a questionnaire survey of choice and approach to learning. Med Teach. 2010;32(1):83–5.