The Coordinators of Psychiatric Education (COPE) Residency In-Training Exam: A Preliminary Psychometric Assessment

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Objective: The Coordinators of Psychiatric Education (COPE) Residency In-Training Exam is a formative exam for Canadian psychiatric residents that was reconstructed using assessment best practices. An assessment of psychometric properties was subsequently performed on the exam to ensure preliminary validity and reliability.

Methods: An exam blueprint was developed based on the 2007 Royal College objectives for psychiatric training. A minimum pass level was established using a modified Angoff method. The exam was administered to all Canadian psychiatric residents in postgraduate years 2 to 5 with test reliability (Cronbach alpha) and item analysis performed. Exam validity was assessed through blueprint adherence and cross-year resident performance analysis.

Results: Four hundred two exams were suitable for analysis. The overall mean score for all residents was 69.6% (SD=8.5) with significant differences in total scores between each of the postgraduate year groups, with consistently better performance with increasing time in residency. Cronbach alpha was 0.79.

Conclusion: The present study provides preliminary support that the reconstructed COPE Residency In-Training Exam demonstrates adequate reliability and validity, including showing the capacity to discriminate between levels of training.
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coefficient for the global score in psychiatry >0.90) and construct and content validity documented in the literature (8). The PRIE is formative for psychiatric residents, with a copy of the examination and the correct responses supported by references released to the candidates each year after the examination has been scored. Nearly all psychiatric residents in the United States take the exam multiple times during training, and it serves not only as a preparatory aid for board exams but also as a means of providing feedback to residents about their knowledge compared with other psychiatric residents at the same level of training (9). As mentioned, predictive validity has been demonstrated with respect to scores on the American Board of Psychiatry and Neurology Part 1 Examination (6) and faculty/preceptor clinical evaluations (7).

Although the reconstructed COPE exam follows the general model and principles of exam development characterizing the PRIE, the content of the two exams differs. One-third of the PRIE consists of questions related to neurology, and the PRIE has a greater emphasis on pharmacology over psychotherapy. In contrast, the COPE exam is based on the Royal College Objectives of Training in Psychiatry (10). The impetus for a Canadian in-training exam also derives from the current lack of performance standards with which to compare Canadian resident performance on the PRIE, as well as the costly nature of the PRIE for Canadian psychiatric residents ($150 per resident). These factors make the PRIE less than ideal for Canadian programs, and as such, there has been an ongoing desire to improve and standardize the COPE exam. The overarching goal of our study is to evaluate the reliability (internal consistency) and validity (construct and content) of the reconstructed COPE exam. As part of this evaluation, there is particular interest in resident performance relative to a minimum performance level, along with the ability of the exam to discriminate between PGY groups based on the hypothesis that resident performance should improve with increasing levels of training.

Methods

The reconstructed COPE exam was planned to consist of 100 multiple-choice, single best-answer questions testing knowledge, comprehension, application, and analysis of psychiatric material (11). Initially, 22 content areas were identified; these were reduced to 18 areas during exam development. Weightings were given to each content area in an attempt to reflect the practice of a general psychiatrist. The weightings yielded an approximate number of exam questions dedicated to each content area, which was further subdivided into four subsections relating to basic science, etiology, and epidemiology; assessment and diagnosis; biological therapies (pharmacotherapy and ECT); and psychotherapy.

The proposed exam blueprint and a blank blueprint (content areas but no assigned weightings) were distributed directly to all 16 Canadian psychiatry program directors. The program directors were asked to provide written, voluntary, signed consent and then complete a blank blueprint by filling in assigned weightings for each content area. A similar process of validation and potential modification has been utilized in development of the PRIE (12).

After the blueprint was reviewed, 100 new multiple-choice questions were developed, because there was no exam bank to reference. The questions were primarily based on knowledge content from core psychiatry textbooks (13, 14) and practice guidelines from The Canadian Journal of Psychiatry and The American Journal of Psychiatry. The questions were reviewed by other psychiatrists with academic appointments in the Department of Psychiatry at the University of Calgary for relevance, content, and wording and to ensure that the answers were correct with appropriate literature references. The exam was then translated into French.

Standard setting of the exam was completed using a modified Angoff method to determine a minimum performance level for each question. Briefly, after discussing the intent of the exam and reviewing the blueprint, five psychiatrists were asked to define the characteristics of a group of examinees that would barely pass the exam—a minimally competent group. This rater training process is important to ensure that the judges have a clear understanding of the expectations of the exam and the performance of the examinees. The five judges then considered each question and estimated a percentage of the minimally competent group that would answer correctly. Scores were recorded and presented to the five judges for discussion and revision. The final values were averaged for each question and the minimum performance level for the exam was the sum of those averages (15–17). The aim was for an absolute cutoff mark of 70%, to approximate that used by the Royal College of Physicians and Surgeons of Canada (RCPSC) for the psychiatry certification examinations. The minimum performance level set for the 2007 COPE exam was 71.2%.

The research protocol was approved by the University of Calgary Research and Ethics Review Board prior to