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Authors
MacDougall, Conan
Brock, Tina

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LETTER

Response to Mok and Romanelli: Identifying Best Practices for and Utilities of the Pharmacy Curriculum Outcome Assessment Examination

To the Editor: We read with interest the excellent summary by Mok and Romanelli[1] of the available literature related to the Pharmacy Curricular Outcomes Assessment (PCOA) examination. Their review focuses on the correlations of PCOA scores to other assessments and the potential implications at an individual student level, while noting the lack of study of PCOA for contributions to curricular evaluation. In response, we share an example of a feasible methodology for using cohort PCOA scores to evaluate curricular contributions and identify priority areas for targeted intervention.

The University of California San Francisco (UCSF) School of Pharmacy administers the PCOA at the start of the first (P1) and final (P3) quarters of didactic coursework. This provides an opportunity to analyze paired scores over time. To do this, we create a visual summary of the changes in UCSF student performance at a cohort level across content areas (measured by percentile rank) and subtopics (measured by percent correct). For subtopics where transformation to percentile rank is not provided, we include the national subtopic percent correct values as a proxy for exam item difficulty.
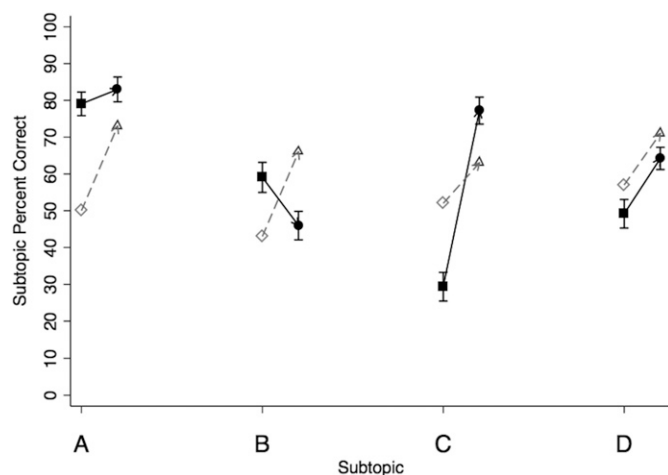
Black squares = UCSF P1 scores
Black circles = UCSF P3 scores
Open diamonds = national P1 scores
Open triangles = national P3 scores
Lines with arrows = change in UCSF and national scores from P1 to P3 years
Error bars are 95% confidence intervals on UCSF scores

Figure 1. Percentage Correct on Selected PCOA Subtopic Areas at UCSF and Nationally by Curricular Level for the Class of 2017 Cohort.

Figure 1 displays sample results from this type of analysis for four PCOA subtopics (designated A-D) selected to illustrate this programmatic evaluation model. Subtopic A illustrates an area where incoming UCSF P1s demonstrate a high level of baseline knowledge, with only modest improvement by the P3 year (in contrast to the greater gains nationally). However, given the high performance of P1s, maintenance of performance, rather than gain, is probably the best marker of curricular success in this subtopic. For Subtopic B, UCSF P1s outperform the national P1 average, but their scores in this area decrease by the third year, even while the national average was higher for peers during this testing window. This represents a clear priority area for investigation with consideration not only of where this content is placed in the curriculum but how it is taught, practiced, and assessed. Subtopic C represents an area where UCSF P1 knowledge was relatively low and below the national average, but on reassessment in P3 year had increased substantially to above the national average. This is a clear representation of the "value add" of the UCSF curriculum and worthy of further investigation as a potential best practice in teaching to be shared with instructors in other curricular areas. Student performance on the content in Subtopic D improves from P1 to P3 year, but the gain is modest, and scores remain below the national average. While less of a red flag than Subtopic B, investigation of ways to improve performance in this subtopic may be a worthwhile quality improvement initiative.

Using this method has allowed us to target areas for immediate improvement in our existing curriculum (eg, Subtopic B) as well as to inform longer-term actions consistent with the planning for our new curriculum launching in 2018. Administration of baseline and follow-up PCOA assessments and graphical visualization techniques may allow educators to better utilize the PCOA to achieve one of its primary aims (ie, evaluating curricular outcomes). We encourage other programs to share their approaches, with a goal of stimulating wider dialogue about how this assessment can support development in the profession.

Conan MacDougall, PharmD, MAS,[a]
Tina Brock, MS, EdD[b]
[a] University of California San Francisco School of Pharmacy, San Francisco, California
[b] Monash University, Melbourne, Victoria, Australia

REFERENCE

1. Mok TY, Romanelli F. Identifying best practices for and utilities of the pharmacy curriculum outcome assessment examination. *Am J Pharm Educ.* 2016;80(10):Article 163.