

# Longitudinal Assessment of Students' Skills Interpreting and Applying Results from Clinical Studies

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## BACKGROUND AND OBJECTIVE

Interpreting and applying information from clinical studies is an essential skill for student pharmacists to execute the Pharmacists' Patient Care Process (PPCP). The objective of this study is to describe students' longitudinal skills in interpreting and applying clinical studies following advanced pharmacy practice experiences (APPEs).

## DESIGN AND METHODS

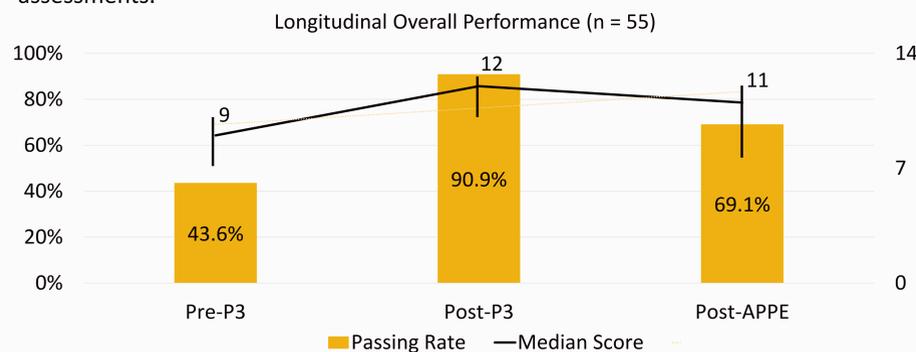
Following completion of required coursework in drug literature interpretation and evaluation in the P2 Spring semester,<sup>1</sup> students in the class of 2017 at one pharmacy program completed a formal assessment (14 points, 70% passing threshold) where they interpreted a piece of primary drug literature and applied results to a patient case at 1) pre-P3 year, 2) post-P3 year in a high-stakes objective structured clinical examination (OSCE), and 3) during required post-APPE assessments. An example question set (conducted pre-P3 year) is provided below. Students were required to complete two formal journal club presentations during the P3 year, and at least two during APPEs. Performance on each assessment was compared using appropriate tests for paired data and an alpha value of 0.05. Students were also surveyed to assess their self-efficacy in this skillset. The project was verified as exempt by the Manchester University Institutional Review Board.

## ASSESSMENT

1. Identify two key ways the patient is similar to the patients in the study considering inclusion criteria, exclusion criteria, or baseline characteristics.
2. Identify two key ways the patient is dissimilar from the patients in the study considering inclusion criteria, exclusion criteria, or baseline characteristics.
3. What amount of A1C lowering can be expected with canagliflozin?
4. What amount of A1C lowering can be expected with sitagliptin?
5. Was there a statistically significant difference between groups in terms of A1C reduction? Why or why not?
6. Will the A1C reduction observed with either medication be considered clinically significant for this patient, considering the guidelines? Why or why not?
7. Will you recommend canagliflozin, sitagliptin, or something else for this patient?

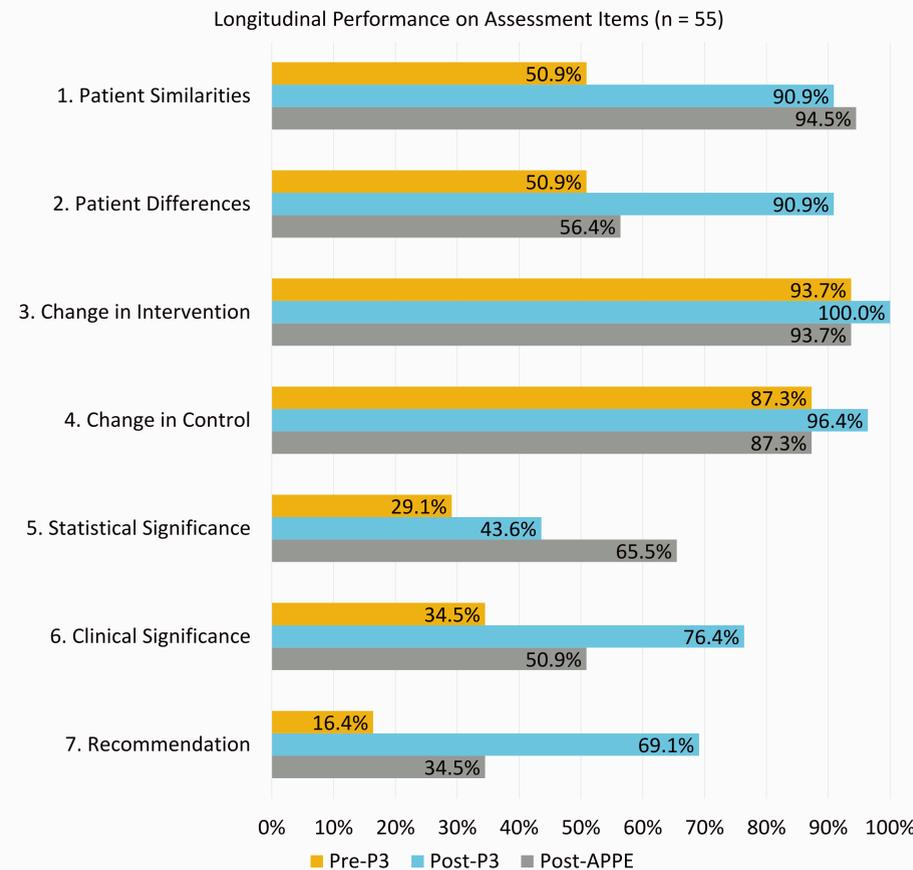
## RESULTS

Fifty-five of 71 (77.5%) of graduating students completed all three assessments. On APPEs, students led a median of 4 (IQR 3 to 5) and participated in a median of 8 (IQR 5 to 10) journal club discussions. The following figure plots median scores ( $p < 0.001$  for each comparison) and first-time pass rates ( $p < 0.01$  for each comparison) across assessments.

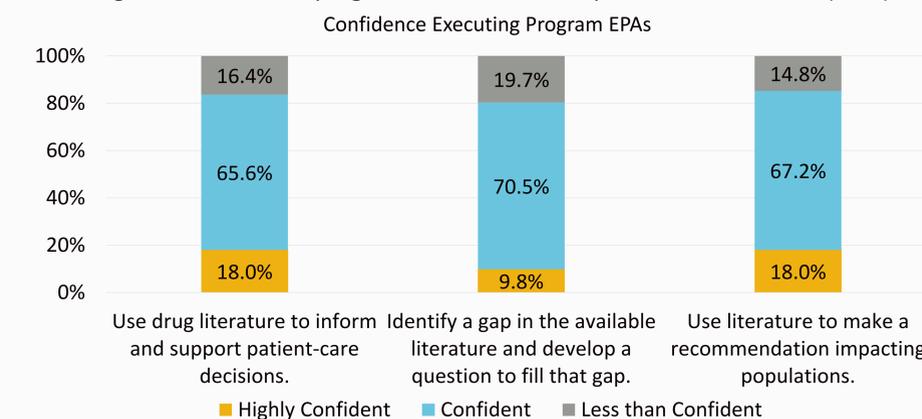


## RESULTS (continued)

The following figure illustrates performance at each time point by assessment item in terms of percentage of students who earned full credit on the item across assessments.

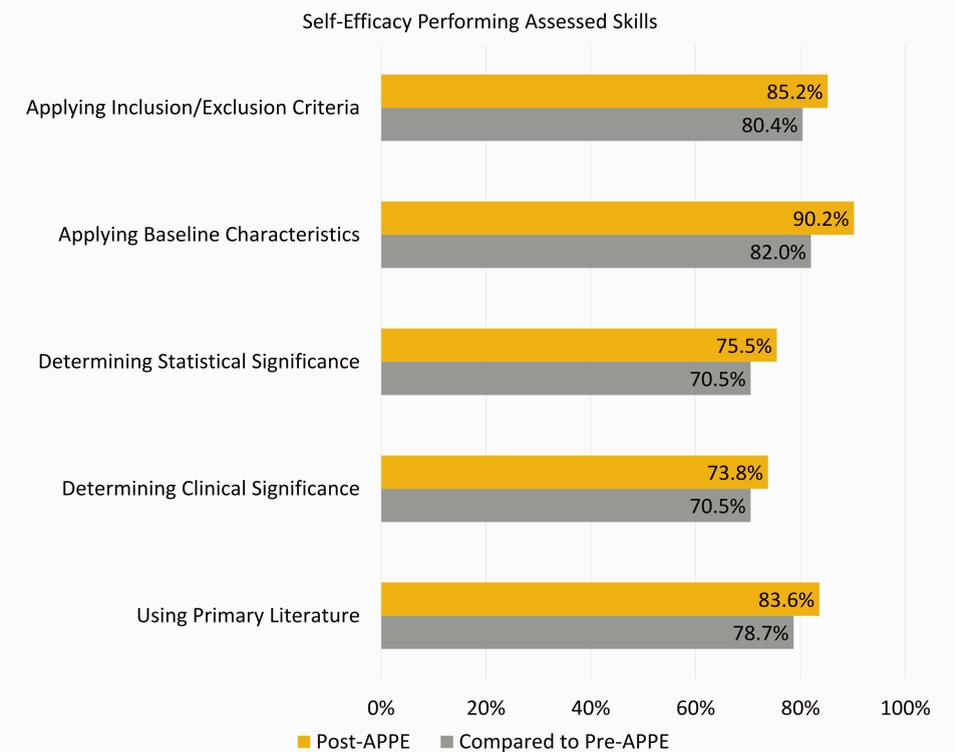


Sixty-one of 71 (85.9%) of graduating students completed the survey. The following figure illustrates graduate confidence (5 = highly confident, 1 = not at all confident) executing the three related program-level entrustable professional activities (EPAs).



## RESULTS (continued)

The following figure illustrates self-efficacy completing the assessed skills post-APPE (5 = highly confident, 1 = not at all confident) and, in a retrospective pre-/post- approach, compared to pre-APPE (5 = considerably more confident, 3 = similarly confident, 5 = considerably less confident) as the percentage of students responding with a 4 or 5.



## DISCUSSION AND CONCLUSION

Student performance on a drug literature interpretation assessment was highest during a high-stakes post-P3 OSCE assessment compared to low-stakes post-APPE and pre-P3 assessments. Performance improved post-APPEs for determining statistical significance but decreased for identifying patient differences compared to the studied population, determining clinical significance, and forming and evidence-based recommendation. The difference in overall performance may have been driven by different levels of consequences for poor performance (many students simply left items 6 and 7 blank on the post-APPE assessment). Students expressed high self-confidence executing three related EPAs and high self-efficacy in performing the assessed skills. A retrospective pre-/post-analysis suggests that students' perception of self-efficacy grew during APPEs. Based on results, students who do not satisfactorily perform during a high stakes APPE journal club are now referred to drug information faculty for remediation.

## REFERENCE

1. Beckett RD, Henriksen JA, Hanson K, Robison HD. Teaching student pharmacists to apply drug literature to patient cases. Am J Pharm Educ 2017; 81(2): 34.