

Bridging an Even Greater Divide: The Impact of COVID-19 on Establishing Students' Foundational Knowledge of Life Sciences at Entry to University

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Universities in South Africa use the Grade 12 school-leaving examinations to measure whether students have the knowledge and skills needed to enter tertiary-level education. However, given the variation in students' educational background, lecturers at the University of Cape Town have developed and refined an Anatomy and Physiology (A&P) Foundational Knowledge Assessment to establish the preparedness of first year MBChB students for their anatomy and physiology content. Based on our previous work, psychometric analysis showed the assessment to be effective in measuring students' foundational knowledge in human anatomy and physiology (1). Besides assessing foundational knowledge, the purpose of the assessment is to guide lecturers in designing supportive teaching and learning activities, thus making use of its formative potential. The study involved first year MBChB students across intake years 2017-2018. Students that obtained 55% and below for the baseline assessment were considered at risk of potentially performing poorly or failing the anatomy and physiology content. Descriptive analysis showed that approximately 30% of students in both cohorts scored 55% and below for the assessment. The validity of the assessment was determined by comparing the results of the A&P assessment to related content taught in the Basic Health Sciences assessments in the first year MBChB programme. ANOVA and Pearson correlations showed that the assessment is a good predictor for differentiating students' performance on the A&P assessment and in their Basic Health Sciences assessments. Significant differences ($p < 0.1$) between students scoring $\leq 55\%$ and $> 55\%$ for the foundational knowledge assessment supports that the pre-assessment would be excellent in identifying students in need of additional academic support. The A&P assessment was designed with the dual purpose of academically supporting students in their first-year anatomy and physiology content and identifying gaps in foundational knowledge in the subject. Students were thus offered additional support in the form of tutorials, revision/consolidation lessons and videos alongside the course. To determine the preparedness upon entry of MBChB students for first year anatomy and physiology content, item analysis was performed on the test as a whole, and the difficulty level (p -value) and discrimination indices (R_{pbis}) for all of the items were determined. Items from both cohorts with a p value of 0.3-0.7 and with a discrimination index of above 0.2 were analysed. This data was shared with convenors and lecturers in the course to help them understand students' prior knowledge and to use this information to inform teaching. We also discuss in the context of online learning during the COVID-19 pandemic how formative assessments, designed to assess the aptitude of students, are pivotal in developing teaching and learning activities.

Reference

Pienaar, L., Prince R. and Abrahams A. (2021). The Development of a Baseline Assessment tool to establish Learners' Foundational Knowledge of Life Sciences at entry into university. *Afr J Health Professions Educ* 2021;13(1):77-82. <https://doi.org/10.7196/AJHPE.2021.v13i1.1226>

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