

# TESTING A MODEL FOR IDENTIFYING NURSING AND PARAMEDIC STUDENTS' RISK IN LEVEL 1 HUMAN BIOSCIENCE

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## BACKGROUND

Factors such as the number of hours of paid work, class attendance and university admission scores have been shown to impact on student success. Conflicting results have been demonstrated for factors such as age, healthcare work experience and previous study of biology. Self-efficacy has been linked to academic achievement and performance in science courses has been directly linked to overall academic achievement. At our regional university the student demographic profile of students enrolled in Human Bioscience 1 indicates that up to 50% of students complete the final year of high school and consequently at least half enter through alternative pathways.

## AIMS

1. Gather detailed information regarding the student demographic profile
2. Develop a model for student risk independent of university admission scores.
3. Prospectively test the model

## METHOD

Students enrolled in Human Bioscience 1 (n=1328) in 2011-12 were invited to undertake an online survey and short science test. The response rate was 70.4%. Data was matched to student final results. A linear model using restricted maximum likelihood was used to analyse the data. Validation of the model was undertaken using 10% of the data randomly selected with the remaining 90% of the data being used to estimate the model. Predicted TotalMark was then compared with the observed TotalMark. Prospective testing of the model was undertaken with data collected during session 1 of 2014.

## RESULTS

Socioeconomic status and the short science test score were not significant to the model. The average correlation between the predicted TotalMark from the model and the actual observed TotalMark for 2011-12 cohort was 0.319 (Range 0.086 – 0.538). A comparison of the demographic characteristics between the two groups, 2011-12 and 2014, indicated similar profiles. Both groups contain students enrolled to study by distance mode and on a campus.

The model was used to predict the potential mark to be achieved by the 2014 students. The predicted marks were classified as pass or fail based on a mark >49.5%. McNemars test was then used to determine if this prediction was significantly different from the observed pass/fail result. Only 8 of 300 students were misclassified. The test showed there was no significant difference between observed and predicted values.

## DISCUSSION

Students enrolled in the nursing course are less likely to succeed than their paramedic counterparts with similar backgrounds. The risk is further increased for students aged less than 25 years and students who are the first in their family to attend university. The predictive model highlighted the tension between previous health care work experience and study success. If the student had work experience but was studying on campus the work experience had a negative impact. This may be related to age as those studying on campus are younger overall and work experience is unlikely to have been at a high level of responsibility. This contrasted with those studying by distance, most of who were older and had a higher level of responsibility due to prior technical college qualifications.

Limitations to the model include factors such as carer responsibility and measures of the students' self-efficacy, engagement and anxiety all of which have been shown to impact on student success. Socioeconomic status was determined by geographic location which may not accurately reflect the status for an individual student.

## IMPLICATIONS

With the increasing diversity of undergraduate student populations, the ability to identify students at risk of attrition is more important than ever. The regression model provides a mechanism to identify students who may be assisted by targeted strategies, such as pre-study resources and inclusion of mechanisms for building study resilience.

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