

PREDICTORS OF STUDENT NURSE PERFORMANCE

P C MEARNS

OPSOMMING

Die skrywer het 'n ondersoek onderneem om voorspellers vir sukses in die graadkursus aan die Universiteit van die Witwatersrand te identifiseer en om lig op die keuringsdoelwitte te werp.

Voorspeller-veranderlikes is ingedeel in persoonlike, sosiale en akademiese eienskappe. Hulle is vergelyk met kriteria vir akademiese en praktiese verpleegprestasie, 'n subjektiewe aanslag en die student wat 'n risiko loop om te druipe of te staak.

Betekenisvolle korrelasies tussen voorspellers en prestasiekriteria het getoon dat 'n aantal voorspellers wel die potensieel suksesvolle of hoë risiko studente kan identifiseer.

INTRODUCTION

The BSc (Nursing) course was commenced at the University of the Witwatersrand in 1969. A total of 112 students were admitted to the course between the years 1969 and 1975, inclusive. Of this number forty-seven students had graduated by the end of 1978, with two students still to complete course requirements. This yields an attrition rate of greater than 50% in spite of the selection process in use at that time.

A validation study to predict success on this degree course was undertaken in view of the attrition rate and to clarify selection objectives.

Objectives of the Study

- To isolate personal, social and academic predictors of future theoretical performance, with the aim of improving student selection.

- To isolate personal, social and academic predictors of future practical nursing performance, with the aim of improving student selection.
- To isolate personal, social and academic predictors of an overall rating of student performance in the nursing role, with the aim of improving selection.
- To identify the student at risk of failing or dropping out of the course, so that appropriate remedial action may be taken.

Literature Study

A vast study was undertaken of relevant South African and international literature.

Design of the Study

Sample

Of the 112 students who had commenced the course, 104 subjects were selected for the study. A 92,85% sample of the population was thus utilised.

Data collection

The data required for this study were obtained from existing records kept at the Johannesburg General Hospital; the Medical Faculty Office and Department of Nursing Education of the University of the Witwatersrand.

The instrument

In order to predict training success, personal background and previous performance variables were researched and validated against performance criteria. The instrument consisted of existing records and precoded sheets.

Predictor variables

The predictor variables researched in this study were divided into three

broad categories related to the personal, social and academic characteristics of the selected students prior to admission to the course.

Personal characteristics

These included:

- year of admission to BSc (Nursing)
- age of admission
- home district
- religion
- membership of voluntary organisations
- choice of faculty
- school principal's assessment.

The characteristics assessed by the principals were categorised as follows:

- academic ability) combined into one variable
- application to work) called ability/application
- character) combined into one variable
- personality) called attributes
- ability to get on)
- with others)
- previous experience as student nurse/Nursing assistant/scholar nurse.

Social characteristics

This group comprised:

- father's occupation
- leadership qualities
- type of school attended.

Academic characteristics

These included:

- time lapse between matriculation and commencement of the course
- percentages gained in school subjects and the Matriculation aggregate
- number of sciences studied
- ratio of insight over memory subjects
- relevant post-school training
- previous non-completion of a course
- post-school work experience.

Criterion variables

In this study the results obtained in the BSc (Nursing) course, in theory and practice, were utilised as the criteria of training success for validating the predictor variables considered as possibilities for use in the selection of students.

Academic performance criteria

These criteria consisted of the results obtained in each year for Nursing and the ancillary subjects.

Practical nursing performance criteria

Student performance was measured in a system of continuous assessment in Nursing and Midwifery.

The second measure of the practical nursing abilities of students was obtained from the staff reports completed by the sisters in charge of the wards in which the students had worked.

The following variables were utilised:

- approach to patients
- attitude to work (a combination of ratings obtained for interest shown in work, sense of responsibility and initiative)
- practical ability (a combination of the rating obtained for skill and systematic work)
- teaching ability
- leadership qualities.

Subjective rating

An overall performance rating was obtained from the Head of the Department of Nursing Education for each of the subjects in the sample. This was a subjective rating based on the overall performance of the student in her role of *Nurse*.

Student at risk of failing or abandoning the course

These criteria included:

- total number of years to graduation
- year repeated
- year of abandonment
- reason for abandonment
- course commenced after abandonment.

Techniques employed in the data analysis

In this study, the data included units of measurement which fitted into nominal, ordinal and interval

scales. As a result, various methods of analysis had to be employed.

The methods included the calculation, by computer, of frequencies, means, standard deviations and maximum and minimum scores.

Chi-square tests and product moment correlations were employed to measure the relationship between the predictor and criterion variables under study. A limited number of multiple correlations were calculated for those dependent variables (that is aspects of course performance) which appeared to be more important for the prediction of success and failure.

DISCUSSION OF RESULTS

The main findings of the study were as follows:

The prediction of academic performance.

Of the predictors tried out in the case of academic performance criteria only the types and specific predictors discussed below functioned satisfactorily:

Personal predictors

Personal predictors, namely the ability/application and attributes ratings made by the school principal were related to academic performance. These variables showed promise in the prediction of performance in Nursing 1 and 2, Chemistry 1, Sociology 1, Physiology (sp), Anatomy (sp), Public Health 2. The ability/application rating was the third best predictor of the theoretical aggregate gained over the four-year period.

Academic performance predictors

The school subject results and the matriculation aggregate provided the best overall predictors of theoretical performance. Biology was the only subject which predicted performance in all of the first-year subjects, thereafter the predictive efficiency of this variable declined. However, it was the second best predictor of the theoretical aggregate gained over the four-year period.

Mathematics predicted two out of the five first-year subjects, namely Nursing 1 and Chemistry 1 and all

of the second-year subjects. Mathematics was, in addition, the only school subject which maintained its predictive capacity throughout the course. The subject which it consistently predicted over the four-year period was Nursing.

The Science school subject predicted performance in Chemistry 1, Sociology 1, Anatomy (sp) and Physiology (sp). It was the best predictor of Physiology (sp) performance.

Of the remaining school subjects researched, English predicted performance in Nursing 1, Psychology 1, Sociology 1, Nursing 2, and Public Health 2.

When used as a predictor of theoretical performance the matriculation aggregate maintained its predictive capacity throughout the course; although this capacity declined over the four-year period. The matriculation aggregate was the best predictor of the theoretical aggregate gained in the course.

Relevant post-school training and previous non-completion of a course were both significantly but negatively correlated with the results in Physiology (sp) and Sociology (2).

As can be seen from the above summary, academic performance in each of the first and second-year subjects was significantly predicted by personal and academic predictors. Thereafter the efficiency of these predictors declined. Social predictor variables did not correlate significantly with any of the performance criteria. The aggregate of the total theoretical performance was predicted by the personal and social variables that best predicted the performance of individual subjects studied in the course.

The prediction of practical nursing performance

In the sphere of practical nursing performance, limited significant correlations were calculated between the predictors and the criteria of practical nursing performance.

- Only Clinical Nursing in the first year of the course was predicted when using the product moment correlations. The predictors concerned were, as for first-year academic performance, the variables

of Biology, Mathematics and the matriculation aggregate. Clinical Nursing performance beyond the first year was predicted only by the multiple correlation which occurred between age at admission and Biology. Clinical Nursing 4 was significantly predicted by Mathematics.

- In the prediction of Clinical Midwifery performance, the age at admission and Mathematics predictors showed promise. A significant multiple correlation was calculated between the predictor's age at admission, attributes and Mathematics and the criterion of Clinical Midwifery, thereby increasing the predictive efficiency for the criterion.
- Staff report ratings were poorly predicted by the personal, social and academic predictor variables. Of the staff report ratings in the junior years, only teaching ability and leadership qualities were predicted by the predictors *ratio of insight over memory subjects* and leadership qualities displayed at school, respectively. In the senior years approach to patients was predicted by Science and *teaching ability* by English.

The prediction of the subjective rating

Of the predictors tried out in the case of the subjective rating, age of admission, Mathematics, Biology, Afrikaans and the matriculation aggregate functioned satisfactorily.

As with the prediction of academic and practical nursing performance, the best overall predictors

were again the past academic performance variables.

The identification of the at risk student

In this study six criteria related specifically to those students who failed a year and/or who dropped out of the course.

Number of years to graduation.

It was found in this study that students who fare poorly in Mathematics and the matriculation aggregate, are more likely to take more than four years to complete the course requirements.

First year repeated. A significant negative correlation was calculated between the matriculation aggregate and this criterion. From this result it appears that the lower a student's matriculation aggregate, the greater her chance of failing the first year of the course.

Year of abandonment and ultimate graduation or non-graduation. Not one of the predictor variables correlated significantly with these criteria.

Reason for abandonment. Of the students abandoning the course 62,71 percent did so because of academic failure, and 27,12 per cent because they felt they could not cope with the demands of the course. Using chi-square, age at admission and previous type of employment were found to be significantly associated with the reason for abandonment.

Course commenced after abandonment. A total of 59,32 per cent of discontinuing students commenced the diploma in nursing course. Not one of the predictors related significantly to the course commenced by students after abandonment.

Conclusion

A review of the significant correlations between predictors and performance criteria, reveals that a number of the predictors are especially valuable in the identification of the potentially successful student who achieves in theoretical and practical performance and the student at risk of failing or dropping out of the course.

The performance criteria that were best predicted by the available predictors were in the main the criteria of academic performance.

Limited prediction of the practical nursing performance may be made in the light of the results obtained in this study. In fact, prediction of practical nursing performance beyond the first year, is negligible.

The overall performance of a student in her role as nurse, did correlate with predictor variables. The majority of these variables related to past academic performance.

In terms of the results obtained in this study, the student at risk of failing and underachieving can be identified. Whether attrition would occur or not, nor the stage at which it would occur was not predicted by the predictor variables utilised in this study.

BOEKRESENSIE BOOK REVIEW

AANGEBORE EN ERFLIKE AFWYKINGS — BASIESE BEGINSELS EN PRAKTYK-TOEPASSING

G.S. Gericke, J. Opt'Hof *et al.*
Pretoria HAUM 1983.

Hierdie boek is 'n waardevolle baanbrekerswerk in Afrikaans — 'n handleiding wat vir elke verpleegkundige wat gemoeid is met gesinsorg van onskatbare waarde is.

Die historiese oorsig van mensgenetika word op trefende wyse in breë trekke gegee. Die beginsels van die

ontwikkeling van die volgende aspekte van mensgenetika word wetenskaplik, dog duidelik verstaanbaar, bespreek: biochemiese-, ensieme- en sitogenetika.

Van groot waarde vir die verpleegkundige is veral die hoofstukke oor genetiese raadgewing, diagnose en behandeling van die verskillende afwykings, die morele en etiese dilemmas in mensgenetika sowel as die regsgeneeskundige aspekte van perinatale genetika.

Vir die verpleegkundige beroep is hierdie handboek van groot waarde en dit word sterk aanbeveel.

'n Hersiene, Engelse uitgawe is ook pas uitgegee.

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