Factors Associated with Academic Performance of Physical Therapy Students

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ABSTRACT

Understanding the pre-matriculation factors that influence academic success facilitates the recruitment and retention of students who are more likely to graduate on time.

Objective: *To determine the factors associated with the academic performance of students enrolled in the physical therapy diploma programme.*

Methods: *Records of 250 students enrolled over a twenty-year period at the School of Physical Therapy were reviewed. Data were collected and organized using a data collection sheet. Data were analysed using the Statistical Package for the Social Sciences (SPSS). Relationships between the independent variables: age, gender, marital status, work history and entry qualifications, and the dependent variables: academic performance (percentage of subjects passed at the first sitting of examinations and success in the Final Qualifying Examination), withdrawal and delayed graduation were examined using correlation coefficient, t-test, ANOVA and chi-square as appropriate.*

Results: *Results revealed that students gaining the minimum entry qualifications at one sitting of GCE O' Level/CXC examinations ($p < 0.01$) and who had GCE A' Level passes ($p < 0.05$) were less likely to withdraw from the programme. Students without prior work experience performed better during the course of study ($p < 0.05$) but the older and married students were more likely to withdraw ($p < 0.01$). Older students performed better on the Final Qualifying Practical and Theory Examinations taken at the end of the academic programme ($p < 0.05$) but had a lower percentage of subjects passed at the first sitting of course examinations ($p < 0.05$).*

Conclusion: *Students with better academic preparation demonstrated better academic performance. These findings were consistent with prior studies in the field.*

Keywords: Academic performance, physical therapy students

Factores Asociados con el Rendimiento Académico de los Estudiantes de Terapia Física

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RESUMEN

La comprensión de los factores de pre-matrícula que influyen en el éxito académico, facilita la captación y retención de los estudiantes que tienen mayor probabilidad de graduarse a tiempo.

Objetivo: *Determinar los factores asociados con el rendimiento académico de los estudiantes matriculados en el programa de diploma de terapia física.*

Métodos: *Se revisaron las historias de 250 estudiantes de la Escuela de Terapia Física, correspondientes a un período de 20 años. Los datos fueron recogidos y organizados mediante hojas de recogida de datos. Los datos fueron entonces analizados utilizando el llamado Paquete Estadístico para las Ciencias Sociales (SPSS). Utilizando el coeficiente de correlación, la prueba t, análisis de la varianza (ANOVA), y chi-cuadrado según fuera apropiado, se examinaron las relaciones entre las variables independientes de edad, género, estado civil, historia de trabajo y requisitos de ingreso, así como las variables dependientes: rendimiento académico (por ciento de asignaturas aprobadas en la primera convocatoria de exámenes y éxito en el examen de calificación final), abandono del curso, y graduación diferida.*

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Resultados: *Los resultados revelaron que los estudiantes con las calificaciones mínimas de ingreso en los exámenes de CXC y de nivel GCE O (*p < 0.01*), y nivel GCE A aprobado (*p < 0.05*) presentaban una probabilidad menor de abandonar el programa. Los estudiantes con experiencia de trabajo anterior tuvieron un mejor desempeño durante el programa de estudios (*p < 0.05*), en tanto que los estudiantes casados o de mayor edad mostraron una mayor tendencia a abandonar los estudios (*p < 0.01*). Los estudiantes mayores tuvieron mejores resultados en el examen práctico de calificación final y los exámenes teóricos al final del programa académico (*p < 0.05*), pero tuvieron un por ciento menor de aprobados en la primera convocatoria de exámenes (*p < 0.05*).*
Conclusión: *Los estudiantes con mejor preparación académica demostraron mejor rendimiento académico. Estos resultados concuerdan con estudios anteriores en este campo.*

Palabras claves: rendimiento académico, estudiantes de terapia física

INTRODUCTION

The School of Physical Therapy, established in Jamaica in 1972, trains physiotherapists for the English-speaking Caribbean. Despite students meeting the matriculation requirements (for the Diploma programme), some completed the programme of study in more than the minimum time while some withdrew. All applicants were required to have a minimum of five subjects passed at the General Certificate of Education Ordinary Level Examination (GCE O'level), Caribbean Examination Council (CXC) General Proficiency or equivalent. They were also interviewed and were required to have volunteered in a physiotherapy facility. The Diploma was awarded to students who were successful in all course examinations and the Final Qualifying Examination (FQE) that was taken at the end of the programme of study. Students were also required to complete a research project in the final year of studies.

Understanding the factors that influence academic success facilitates the recruitment and retention of students who are more likely to succeed. To date, only a few research studies relating to the prediction of academic and clinical performance in physical therapy have been published. These investigations have varying conclusions. Most conclude that pre-physiotherapy academic factors such as the grade point average are the main predictors of academic performance, while others have shown some impact of non-academic factors such as age and previous work experience (1, 3, 4–7, 10–12).

The factors that predict academic performance at this institution (School of Physical Therapy) have never been examined. Therefore the purpose of this study was to investigate the relationship between measures of academic performance and independent variables of admission requirement, age, gender and previous work history of the students admitted to the School, over a twenty-year period.

SUBJECTS AND METHODS

A retrospective review of students' records at the School of Physical Therapy was conducted for students enrolled over a twenty-year period. A data collection sheet was used to collect and organize the required data. The independent variables of age, gender, marital status, number of subjects passed at *GCE* O' level/CXC and *GCE* A' level examinations, the achievement of matriculation passes (five subjects) at a single sitting of GCE and/or CXC examinations (yes/no), previous work history (yes/no), and the dependent variables of percentage of subjects passed at the first sitting in each academic year, results of Final Qualifying Examination (FQE), delayed graduation (yes/no) and withdrawal (yes/no) from the programme were recorded.

Data were analysed using the Statistical Package for the Social Sciences (SPSS). Frequencies and means were computed for descriptive data. Relationships were analysed using correlation coefficient and Chi-square and differences were analysed with *t*-test and ANOVA as appropriate.

RESULTS

Two hundred and fifty student records were reviewed. Age at admission ranged from 17 to 40 years, with a mean of 20.9 years (± 3.27) and a mode of 19-years (61%). Single students accounted for 93.4% (233), 5.3% (13) were married and 0.4% (1) was divorced. Few had previous work experience (26.8%, n = 67) or tertiary education (12.4%, n = 31) [Table 1].

Table 1: Matriculation status of students

Variable	Percentage (n)	
Gained entry qualification at one sitting		
Yes	56.0%	(140)
No	42.8%	(107)
Recorded A' Level passes at the time of interview		
None	48.8%	(122)
1 or 2	22.0%	(55)
> 2	23.2%	(58)
Prior work experience		
Yes	26.8%	(67)
No	73.2%	(183)
Prior tertiary education		
Yes	12.4%	(31)
No	87.6%	(219)

Missing data due to incomplete documentation in some student records

The majority of students (57%, n = 140) gained the minimum entry qualifications of five subjects at one sitting of the GCE O' level and/or CXC examinations, while 45.2% (113) had GCE A' level passes. The mean number of *GCE O'Levels*/CXC subjects passed at the time of student pre-selection interview was 6.5 (± 1.6) [Table 1].

In the first year of study, the mean number of subjects passed by students (at the first sitting of course examinations) was 10.2 (maximum = 15). In the second year, the mean was 11.0 (maximum = 16) and in the final year, the mean was 5.6 (maximum = 8). During the three years of study, 92% (± 8.01) of all course examinations taken by students were passed at the first sitting, while 21.6% (54) of students had delayed graduation (Table 2) and 16.8% (41) withdrew from the programme.

Table 2:   Academic performance

Academic performance measures	Percentage (n)
Passed final qualifying exam at the first sitting	
Theory	
Yes	82.4 (206)
No	2.8 (7)
Passed final qualifying exam at first sitting	
Practical	
Yes	75.2 (188)
No	9.2 (23)
Withdraw from programme	
Yes	16.4 (41)
No	81.2 (203)
Delayed graduation	
Yes	21.6 (54)
No	64 (160)

Missing data due to incomplete documentation in some student records.

Relationship between Academic Performance and Age
Compared to younger students, older students were more likely to withdraw from the programme ($p < 0.01$) and to have had a lower percentage of subjects passed at the first sitting of course examinations ($p < 0.05$). On the other hand, they performed better on the FQE Theory ($p < 0.05$) and Practical ($p < 0.01$) examinations. Delayed graduation was not found to be significantly related to age (Table 3).

Relationship between Academic Performance and Entry Qualifications at One Sitting
Compared to students who required more than one sitting of the GCE/CXC examinations to gain the entry requirements, students who gained the minimum entry requirements at one sitting of these examinations were more likely to stay in the programme ($p < 0.01$) (Table 4). They also had a higher percentage of subjects passed at the first sitting of course examinations.

Table 3:   Relationship between academic performance and age

Academic performance measures	Mean Age (SD)	
Withdraw from programme		
Yes	22.6	(3.49)
No	20.6	(3.14)**
Passed final qualifying exams at the first sitting		
Theory		
Yes	20.6	(3.19)
No	19.9	(0.38)*
Practical		
Yes	20.7	(3.3)
No	19.8	(1.3.)*
Delayed graduation		
Yes	20.6	(3.9)
No	20.6	(2.9)

*p < 0.05   **p < 0.01

Missing data due to incomplete documentation in some student records

Table 4:   Academic performance and attaining entry qualification at one sitting

Academic performance measures	Attaining entry qualification at one sitting	
	Yes % (n)	No % (n)
Passed final qualification exam at the first sitting		
Theory		
Yes	98.4 (121)	94.4 (85)
No	1.6 (2)	5.6 (5)
Practical		
Yes	91.1 (112)	86.4 (76)
No	8.9 (11)	13.6 (12)
Delayed graduation		
Yes	25.4 (32)	25.0 (22)
No	74.6 (94)	75.0 (66)
Withdraw from programme		
Yes	11.2 (15)	21.4 (23)*
No	88.8 (119)	78.5 (84)

*p < 0.01

Missing data due to incomplete documentation in some student records.

Relationship between Academic Performance and Prior Work Experience
Students with prior work experience had a significantly lower percentage of subjects passed at the first sitting of course examination*s* ($p < 0.05$) [Table 7]. They were also more likely to remain in the programme, to graduate on time and to pass the FQE examinations. These relationships, however, were not found to be statistically significant (Table 5).

Table 5: Relationship between academic performance and prior work experience

Academic performance measures	Having Prior Work Experience	
	Yes % (n)	No % (n)
Passed final qualifying exam at the first sitting		
Theory		
Yes	100.0 (60)	95.4 (146)
No	0.0 (60)	4.6 (7)
Practical		
Yes	91.5 (54)	88.2 (134)
No	8.5 (5)	11.8 (18)
Had delayed graduation		
Yes	23.3 (14)	26 (40)
No	76.7 (46)	74 (114)
Withdraw from programme		
Yes	12.5 (8)	18.3 (33)
No	87.5 (56)	81.7 (147)

Missing data due to incomplete documentation in some student records

Table 7: Relationship between variables and percentage of subjects passed at the first sitting (during the course of study)

Variables	Mean percentage of subjects passes (during the course)
Prior work experience	
Yes	90.6 (− 8.5)
No	93.2 (− 7.7)*
A' Levels passes at the time of interview	
No A' Levels	90.5 (− 8.9)
1 or 2	92.8 (− 6.6)
> 2	95.7 (− 4.7)*
Entry qualification at one sitting	
Yes	93.2 (− 7.04)
No	91.2 (− 9.18)

*p < 0.05

Missing data due to incomplete documentation in some student records

Relationship between Academic Performance and Students' Prior Qualifications

Students with a greater number of O' level/CXC passes were more likely to remain in the programme ($p < 0.01$). Those with A' Level passes (one to two or greater than two) were found to have performed better while in the programme, as reflected by the percentage of subjects passed at the first sitting of examinations during the course of study ($p < 0.05$). Those with greater than two A' level passes performed the best (Table 7). Students with A' Level passes were also less likely to withdraw, have delayed graduation or fail the Final Qualifying Theory and Practical Examinations (Table 6).

Prior tertiary level education or other professional qualifications were found to have no significant impact on academic performance.

Relationship between Marital Status and Academic Performance

Marital status was found to be significantly related to withdrawal ($p < 0.01$). Fifty-four per cent (7) of married students withdrew compared to 14.1% (32) of single students. Marital status was not significantly related to any other measure of academic performance (Table 8).

Table 6: Relationship between academic performance and number of A' Level Subjects passed

Academic performance measures	No 'A' Levels % (n)	1 or 2 % (n)	Greater than 2 % (n)
Passed final qualification exam at the first sitting			
Theory			
Yes	96 (96)	95.7 (44)	98.1 (53)
No	4.0 (4)	4.3 (2)	1.9 (1)
Practical			
Yes	88.1 (89)	91.1 (41)	88.9 (48)
No	11.9 (12)	8.9 (4)	11.1 (6)
Delayed graduation			
Yes	27.2 (28)	27 (13)	20.4 (11)
No	72.8 (75)	72.3 (34)	79.6 (43)
Withdraw from programme			
Yes	18.9 (23)	16.4 (9)	6.9 (4)*
No	81.1 (99)	83.6 (46)	93.1 (54)

* p < 0.05

Missing data due to incomplete documentation in some student records

Table 8: Relationship between academic performance and marital status

Academic performance measures	Single % (n)	Married % (n)	Divorced % (n)
Passed final qualifying exam at the first sitting			
Theory			
Yes	96.6 (96)	100 (8)	100 (1)
No	3.4 (7)	0	0
Practical			
Yes	89.1 (180)	85.7 (6)	100 (1)
No	10.9 (22)	14.3 (1)	0
Had delayed graduation			
Yes	74.6 (153)	14.3 (1)	100 (1)
No	25.4 (52)	85.7 (6)	0
Withdraw from programme			
Yes	14.1 (32)	53.9 (7)	0
No	85.9 (64)	46.8 (6)	100 (1)*

* P < 0.01

Missing data due to incomplete documentation in some student records

DISCUSSION

The selection criteria for entrance into tertiary level academic programmes of study may vary. However, all programmes commonly evaluate students' past academic records to select suitable candidates for entry into the relevant programmes. The results of this study showed that, for the School of Physical Therapy, students with better pre-admission academic preparation (having attained the matriculation requirement at one sitting, having more than the minimum requirements of GCE O'Levels/CXC passes or having GCE A'Level) demonstrated better academic performance. They passed a larger percentage of courses at the first sitting of examinations and were less likely to have delayed graduation or to withdraw from the programme. These findings are consistent with other studies that investigated pre-admission academic achievement as a predictor of academic success (1, 5, 9, 11). We would therefore expect that Caribbean students with better pre-admission qualifications would perform better in this physical therapy programme of study. We cannot forget however, the possible impact of non-academic factors on academic success as demonstrated in previous studies (2, 6). It has been suggested that these factors could also account for some of the variance in academic performance. In this study, the non-academic factors of age, prior work experience a nd marital status were investigated with varying results.

Older students were found to be more likely to withdraw from the programme and to pass less courses during the programme of study. We could speculate that these students could have had other personal challenges, such as family and social responsibilities that compete for their time, leaving them with less time to devote to studying and to the completion of assignments. This is supported by the findings of Utzman, Riddle and Jewell (9) who identified age as a significant predictor of academic difficulty. The older students were also more likely to pass the Final Qualifying (Practical and Theory) Examinations compared to their younger counterparts ($p < 0.05$). The major part of this examination required students to apply physiotherapeutic knowledge to actual and theoretical patient cases. Older students, by virtue of their family and social responsibilities could have developed greater problem-solving skills which facilitated their better performance in these examinations. Like the older students, married students were also more likely to withdraw ($p < 0.01$) and to have delayed graduation. One could speculate that the reasons for this were the same as for the older students, where other personal challenges, such as family and social responsibilities competed for their time, leaving them with less time to devote to studying.

Students with prior work experience were more likely to remain in the programme, to perform better on the FQE (Practical and Theory) but like the older students achieved a smaller percentage of subjects passed at the first sitting of course examinations ($p < 0.05$). Such a pattern of performance could possibly reflect greater perseverance developed through the discipline of work. Maybe some of these students having worked, may have been older. They therefore, may have been affected by some of the constraints of the older student who might have had family and other social responsibilities.

To facilitate the success of students, more may need to be done for those who are older, married or who may have worked. More may need to be done in the provision of academic and non-academic support initiatives such as academic and personal counselling to support these students thus facilitating their successful completion of the programme.

This study had some limitations. Incomplete student records resulted in some missing data for all variables in this study. This could have reduced the power for some subgroup analysis. The findings of the study should therefore be interpreted with caution.

CONCLUSION AND RECOMMENDATION

Refining the ability to predict successful performance in students enrolled at the School of Physical Therapy should be a logical focus for the future. The findings of this study were consistent with some of the prior studies that found that pre-academic preparation was associated with academic achievement. We however consider the findings of this study to be exploratory as further research is needed to delineate the best predictors of physical therapy academic performance in the Caribbean programme. Additional research is therefore warranted. Prospective studies that investigate both the academic and non-academic factors related to success in both clinical and academic component of the programme would be useful.

Defining these parameters have become even more important as the training programme has made its transition from Diploma to Bachelor's degree and the demand for entry into the programme has increased. A larger applicant pool provides a broader base from which to select the most suitable candidates for training. Results of further studies therefore could provide the basis on which to set admission criteria that will facilitate the selection of the students with the best academic potential.

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