

Relationship Between Student Age, Academic Performance, and NBRC Self-Assessment Exam Scores in an Accelerated Associate Degree Respiratory Care Program

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Background

Although there are more AS degree programs in the US, research into the academic success of respiratory care students has primarily focused on the baccalaureate level respiratory care programs. The limited research on associate-level respiratory care programs has focused on comparing associate and baccalaureate programs in terms of diversity or faculty attitudes.^{1,2,3}

The purpose of this study is to determine the relationship between student age, academic performance, and the National Board for Respiratory Care Secure Self-Assessment Exam (NBRC SAE) scores in an accelerated associate degree respiratory care program. Of the numerous degree types offered throughout the United States, some programs available include an 18-month associate-level program with condensed 10-week terms.

The condensed schedule requires the student to learn and retain information in a 10-week term rather than the more traditional 15-week semester typically offered in the traditional associate and baccalaureate respiratory therapy programs. Students participating in the program at Concorde Career College in San Antonio face numerous challenges such as the increased pace, 12-hr clinical days and 5-hr class periods. All students enrolled at this campus participate in the accelerated schedule. The class start time is selected at the time of enrollment and does not change throughout the program if the schedule is followed.

Methods

This retrospective study used existing student records from the Department of Respiratory Therapy at Concorde Career College in San Antonio. Student records and demographics were collected from 37 students enrolled from 2016 through 2020.

Age, student scores on RT 210, RT 250, and NBRC Secure SAE were collected from the student records to determine the relationship between student academic performance in the RT 210 and RT 250 courses as well as NBRC SAE.

After exclusion criteria were applied, a total of 33 students were included in the study. The final sample population included 17 (51.5%) females and 16 (48.5%) males and 12 (36.4%) veterans and 21 (63.6%) non-veterans. The AM class start time had 17 (51.5%) students, and the PM start time had 16 (48.5%) students. The average age of all students was 30.61 years.

Descriptive statistics were performed on all groups to analyze the students' demographics and overall performance on all examinations and courses.

To explore the effect of gender, prior military service, and class start time on students' academic performance, the following three sets of comparisons were made using the independent t-test: (1) female vs. male, (2) veteran vs. non-veteran, and (3) AM class time vs. PM class time. A Pearson product-moment correlation was performed to determine the relationship between age and academic performance.

Results

Table 1 shows the means and standard deviations of students' academic performance based on gender. The gender groups were similar in sample size with 17 students in the female group and 16 students in the male group. There was no statistically significant difference between male and female students in RT 210 ($p=0.23$), RT 250 ($p=0.60$), on the NBRC SAE ($p=0.23$), and percentage of Students Passing NBRC TMC ($p=0.96$).

Variables	Female (n=17, 51.5%)	Male (n=16, 48.5%)	p-value
RT 210 Grade	83.29 ± 6.45	86.25 ± 7.36	0.23
RT 250 Grade	80.59 ± 3.74	81.50 ± 6.06	0.60
NBRC Secure SAE	67.82 ± 4.64	70.75 ± 8.70	0.23
% of Students Passing NBRC TMC	88.23%	93.75%	0.96

The AM class and PM class were similar in age (31.88 ± 9.49 and 29.25 ± 10.10 , respectively) and gender distribution (AM class: 52.94% female, 47.06% male, PM Class: 50% female, 50% male respectively) As shown in Table 2, no significant difference was found between AM and PM classes on students' academic performance in RT 210 ($p=0.76$), RT 250 ($p=0.51$), the NBRC SAE ($p=0.23$), and percentage of Students Passing NBRC TMC ($p=0.38$).

As shown in Table 3, there was no significant difference in the veteran and non-veteran student groups in RT 210 ($p=0.073$), RT 250 ($p=0.689$), the NBRC Secure SAE ($p=0.15$).

Variables	AM Class (n=17, 51.5%)	PM Class (n=16, 48.5%)	p-value
RT 210 Grade	84.35 ± 8.37	85.13 ± 5.33	0.76
RT 250 Grade	80.47 ± 5.03	81.63 ± 4.94	0.51
NBRC Secure SAE	67.82 ± 8.25	70.75 ± 5.11	0.23
% of Students Passing NBRC TMC	94.12%	87.5%	0.38

Variables	Veteran (n=12, 42.85%)	Non-Veteran (n=16, 57.15%)	p-value
RT 210 Grade	88.42 ± 4.81	84.88 ± 5.07	0.073
RT 250 Grade	82.25 ± 4.71	81.56 ± 4.23	0.689
NBRC Secure SAE	72.58 ± 4.70	69.56 ± 5.73	0.15
% of Students Passing NBRC TMC	91.67%	90.48%	0.64

Table 4 presents the correlation coefficients and corresponding significance levels. There is no significant correlation between age and students' academic performance in RT 210 ($p=0.43$), RT 250 ($p=0.86$), and the NBRC SAE (0.79). The results of this study reveal a positive correlation between the RT 210 and RT 250 course grades ($r=0.725$, $p=0.0001$) as well as between the NBRC SAE and the students' grades in RT 210 ($r=0.744$, $p=0.0001$) and RT 250 ($r=0.789$, $p=0.0001$). For example, the correlation between the RT 210 grade and RT 250 grade was 0.725 ($p=0.0001$) indicating that students' grade in RT 210 ($r=0.725$, $p=0.0001$) was responsible for 52% of the variation in the RT 250 grade. Similarly, the grade obtained in RT 210 ($r=0.744$, $p=0.0001$) accounts for 55% of the variation in the NBRC SAE score. The findings of this study also revealed that 62% of the variation in students' NBRC SAE scores can be explained by their grade in RT 250 ($r=0.789$, $p=0.0001$).

Variables		Age	RT 210 Grade	RT 250 Grade
RT 210 Grade	r	.147		
	Sig.	.413		
RT 250 Grade	r	-.032	.725*	
	Sig.	.861	.0001	
NBRC Secure SAE	r	-.045	.744*	.789*
	Sig.	.805	.0001	.0001

*Correlation is significant at the 0.05 level.

Conclusions

Age, gender, prior military service and class start times did not affect academic performance in an 18-month associate level program that utilizes an accelerated schedule in this study. There is a positive correlation between students' performance in RT 210 and RT 250 as well as students' grades in these courses and the NBRC Secure SAE.

References

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Disclosures

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