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Variables Predicting Academic Success of Nursing Students: a Longitudinal Study in a Nursing Bachelor's Degree Program

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Key words: Predictor, nursing student, academic success
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Abstract

Background. *Academic failure can negatively impact on the student, the university and the nursing workforce in the short term. The aim of this study is to analyze the characteristics and predictors of academic success in two cohorts of students of a Nursing Bachelor's Degree program.*
Methods. *This longitudinal study enrolled students who attended the Nursing Bachelor's Degree program. The Tor Vergata University includes 21 Nursing Bachelor's Degree programs at several Sanitary Institutions of the Rome area, with a mean annual recruitment of 800 students. We considered two cohorts of students beginning the program in the 2011-2012 and 2012-2013 academic years, respectively. The follow-up of these two cohorts ended in the 2017-2018 academic year. We considered socio-demographic and academic variables in the nursing field (pre-admission test grade, training exam grade in the first, second and third year and professional license exam grade). The outcome variable is academic success defined as graduation on time; academic failure is defined as changing degree, delay in completion of the course, attrition and dismissal (failure to complete the studies). Data were collected at baseline (T0), at the end of the first year (T1), at the end of the second year (T2) and at the end of the third year (T3) of the course. A logistic regression was performed to identify predictors of academic success.*
Results. *2,041 students were enrolled, with an average age of 22.0 years (± 4.6, 18-50); 67.4% were female. Regarding academic success, 30.6% of students graduated on time and so achieved academic success, while 69.4% failed to complete the course within the established time: 5.4% (110/2,041) changed the course, the attrition rate was 7.3%, 0.3% (6/2,041) overdue from the course for expiring of the terms, 18.0% (368/2,041) is attending the course and 38.4% (784/2,041) graduated after more than three years. Pre-admission test grade (OR: 10.0, 95% CI: 10.020-10.054) and training exam grade at the second and third years (OR: 10.0 95% CI: 10.027-10.139; OR: 10.2 95% CI: 10.171-10.294) predicted academic success.*
Discussion and Conclusions. *Some nursing students changed course during the last year of the program, while the training exam grade of the second and third years had predicted academic success; this is a brand*

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new information derived from this study. In addition, we confirmed the association of age, gender, secondary school type and grade and preadmission test with academic success. For these reasons, clinical training should be improved and the quality of internship wards, as learning environments, should be monitored. Italian universities should undertake establishing the ideal cut-off in pre-admission tests to determine which students have a high probability of academic success.

Introduction

Over the past two decades, there has been a growing interest in literature regarding academic success of nursing students. The demand for healthcare workers, such as nurses, has increased over time in all the OECD countries (1), because of the number of nurses who are gradually retiring from their activities, and also because they are moving into innovative exercise areas outside the hospital environment (2). In Italy, the nursing workforce is currently represented by 6.1 nurses per 1,000 inhabitants, compared to the European average of 8.6 (3). For this reason, the Italian government has recently decided to expand the number of positions available for the Nursing Bachelor's Degree (4).

A high quality course, able to support students in academic success, is a crucial factor in preventing social exclusion (5). Countering academic failure means promoting human development and increasing the social and cultural capital of the country, creating the conditions for the economic development and the progress of society (6). Academic failure can have a negative short-term impact on the student (7), on the university (8) and on the nursing workforce (9, 10). Universities can be damaged in their reputation and prestige and, since academic success is considered, after 2010, a parameter for evaluating the outcome of the program; according to the Ministerial Decree (D.M.) no. 17/2010, they may lose access to funds or lose customers (students and their families) (11). Finally, considering that a bad reputation, in some countries, can also affect governmental funding (11-14), universities have a strong interest in helping students develop their skills and achieve academic success.

Therefore, academic failure should be taken into consideration by both health systems that have to plan the nursing workforce and by universities, which must try to graduate a number of nurses in line with the work demand and to contain the costs of training (8, 15). However, while you can find several contributions on the topic from various countries in the available international literature, the phenomenon has not been sufficiently investigated in Italy (16). Finally, to reinforce the evidence available, there is a need for studies with a robust methodology and with a longitudinal design to highlight the trend of the phenomenon and the variables that predict academic success /failure (17-19).

Therefore, the aim of this study was to analyze: 1) the percentage of nursing students who attain academic success at an university of Central Italy; 2) the socio-demographic and academic variables that affect academic success; and 3) the academic success predictors.

Background

One of the main problems in the literature, that makes research data difficult to use, is

the meaning and content of "academic success". Some studies refer to academic success as academic performance and refer to the average of the grades (GPA) obtained on the various exams (20-30); other studies use the grade obtained by nursing students in pathophysiology (31, 32); two studies consider the grade obtained from the evaluation of their clinical practice (25, 31); and another study examines the average GPA of nursing disciplines (25). According to Dante et al (16), Lancia et al (6), Jeffreys (33), Mulholland et al (15), Pryjmachuk et al (7), Salamonson et al (19), Seago et al (34) and Sadler (35), academic success is the student's ability to complete the course on time. Deary et al (36) and Destrobecq et al (37) focused on academic failure as the percentage of students who drop out of the course before graduating. However, students who drop out, even if they fall into a category of students who failed in their academic career, cannot be confused with students who continue, even if irregularly, to attend classes and internships but require more time to obtain the degree.

The major reasons for academic failure are family and personal difficulties, an incorrect professional choice (38), disillusionment concerning the gap between expectations and reality (39), dissatisfaction with academic staff (39), the gap between theory and practice, difficult inter-professional relationships and stress in training contexts (40). Female students (21, 26, 41, 42) and older students (6, 22, 26, 30, 31) are those with better academic performance compared to male students, who are characterized by high withdrawal rates; the kind of pre-university high school is a significant predictor of academic success (26-28, 42); perceived detachment from the course is negatively correlated to success; self-control and resilience have been reported as positive predictors of success (25), as well as emotional intelligence and motivation (29); students working more than 16 hours per week negatively impact academic achievement (22, 32). Attending lessons (32), the TEAS (Test of Essential Academic Skills, a pre-admission test that evaluates communication, reading, comprehension, linguistic and mathematical skills, basic knowledge of biology, chemistry, natural sciences, anatomy and physiology) are predictive of success [a minimum score of 82 is able to identify the student who has a 60% probability of success in the course of study (27)]. Finally, the academic performance in the first two years of the course is predictive of success (42).

The academic success/failure is an international problem, that has been studied all over the world. However, in Italy, the phenomenon has not been sufficiently investigated (16) and we have only some knowledge regarding the percentage of academic success of 61.2% (43): the association of academic success with the female gender and older age and without a family commitment, a higher grade in secondary school certification and a higher pre-admission test (44). More in-depth knowledge and a confirmation of the information already known can help manage the academic success/failure phenomenon at an international level.

Materials and methods

Study design

A longitudinal study design was performed.

The sample

A convenience sample of students who attended a Nursing Bachelor's Degree program was included. The Tor Vergata university is responsible of 21 Italian Nursing Bachelor's Degree programs offered in many health institution of the roman area, with a mean annual recruitment of

800 students. We considered two cohorts of students beginning the program in the 2011-2012 and 2012-2013 academic years. The first data collection for the cohort of students enrolled in the 2011-2012 academic year was at the beginning of the first year (T_0), at the end of the first year (T_1), at the end of the second year (T_2) and at the end of the third year (T_3). The same method was adopted for the 2012-2013 academic year students. The follow-up of these two cohorts ended in the 2017-2018 academic year.

The variables

Socio-demographic and academic variables were considered. The socio-demographic variables included age, gender, previous school background (type of senior high school), student work status, marital status, children, cohabiting situation and monthly income. The socio-demographic variables were all recorded at T_0. The academic variables we considered were: pre-admission test grade, training exam grade at the 1st, 2nd and 3rd years, and professional license exam grade. The outcome variable was academic success defined as *graduation on time* by Dante et al (16) and Lancia et al (6). An unsuccessful student was defined as a student who changed degrees, delayed completing the course, dropped out or was dismissed (one who failed to complete her/his studies). The grade of the admission test was collected at time T_0 and, similarly, were collected the grades at the end of the clinical training exam of each of the three years (T_1, T_2 and T_3).

Data analysis

We used the SPSS program (SPSS, Inc., Chicago, IL, USA) version 22.0. Descriptive statistics were used to describe the characteristics of the sample and the academic variables. The χ^2 (chi-squared) test was used for ordinal and dichotomous variables and ANOVA was used for continuous variables to evaluate the differences in socio-demographic and academic variables between students who had academic success and students who had academic failure. Finally, a logistic regression was performed. Variables that showed a significant Pearson correlation coefficient ($p < .05$) at bivariate correlation with academic success were used in the regression model as independent variables. The independent variables were dichotomized to be included in the regression model (gender: 1 = male, 0 = female; marital status: 1 = married and cohabiting, 0 = single, separated and divorced; children: 1 = yes, 0 = no; living with: 1 = with others, 0 = alone; working status: 1 = yes, 0 = no; high school: 1 = literary, scientific, linguistic, psycho-pedagogical, 0 = technical/professional and artistic). The academic success variable was treated as dichotomous (1 = academic failure, 0 = academic success). The determination coefficient of the regression model was calculated using Nagelkerke R^2; the goodness of fit was evaluated through the Hosmer-Lameshow score, on the basis of p-value >.05 (45). Logistic regression results were plotted as odds ratios (ORs) with 95% confidence intervals (95% CI) and p-values.

Ethical aspects

The study was approved by the Internal Review Board. All students were informed of the purpose of the study; the variables were investigated. The participation of the students was voluntary, with the possibility to withdraw or decline to answer any question at any time. The students were made aware of the confidentiality of their responses. The researcher who was responsible for entering the data relating to the students' academic career could not access the database by name but only through an administrative operator.

Results

Sample

The sample of 2,041 students had an average age of 22.0 years (± 4.6, 18-50),

67.4% were female and most came from professional and technical (35.6%) and scientific (34.4%) high schools; 81.9% did not work, 15.0% worked while giving priority to studies, and 3.1% gave priority to work. Out of our sample, 93.6% were unmarried and 2.3% cohabiting, while 94.7% had no children and 53.1% lived with their families. Most of them declared an average of 37.6 minutes (± 37.5, 1-310) of travel to reach the university (Table 1).

Table 1 - Socio-demographic characteristics of the sample (n = 2,041)

Variable	M ± SD (range)
Age	22.03 ± 4.6 (18-50)
Travel to reach university (minutes)	37.6 ± 37.5 (1-310)
Gender	N (%)
Female	1,375 (67.4)
Male	666 (32.6)
Marital status	
Single	1,531 (93.6)
Cohabiting	37 (2.3)
Married	50 (3.1)
Separated	13 (.8)
Divorced	4 (.2)
Children	
No	1,525 (94.7)
Yes	86 (5.3)
Cohabiting with	
Family	866 (53.1)
Other students	617 (37.9)
Partner	86 (5.3)
Alone	61 (3.7)
Working status	
No	1,331 (81.9)
Yes, with priority for the studies	244 (15.0)
Yes, with priority for the work	51 (3.1)
High school	
Technical/Professional	583 (35.6)
Scientific	563 (34.4)
Psycho-pedagogical	198 (12.1)
Literary	166 (10.1)
Linguistic	110 (6.7)
Artistic	18 (1.1)

Legend: M = mean; SD = Standard deviation.

Academic success among nursing students

Regarding academic success, 30.6% of students graduated on time and so achieved academic success, while 69.4% failed to complete the course within the established time: 5.4% (110/2,041) changed the course, 7.3% (148/2,041) left the course (dropped out), 0.3% (6/2,041) overdued from the course for expiring of the terms, 18.0% (368/2,041) is still attending the course and 38.4% (784/2,041) graduated after more than three years.

Table 2 highlights the differences in socio-demographic factors between students who achieved academic success and those who failed. There are statistical differences in age, type of high school, gender and the time spent on the trip between home and university. Students who achieved academic success had a lower average age (21.5, ± 3.9, 18-48) than those who failed (22.3, ± 4.9, 18-50); they came from classical (11.7% vs 9.3%), scientific (38.9% vs 32.1%) and linguistic (9.0% vs 6.0%) high schools; they are predominantly female (70.9% vs 65.8%) and they take longer time to travel between home and university [(40.5 ± 40.2, 1-310) vs. (36.2 ± 35.9, 1-240)].

Table 3 describes the differences in the academic variables between successful students and those who failed. There are differences in all variables (pre-admission test, evaluations of clinical training exam grade in the 1st, 2nd and 3rd years, final professional license grade). Students who achieved academic success had a higher average grade than other students both on the pre-admission test, the clinical training exams and the final professional license grade.

On average, students finished their career after 4.3 years of coursework (± 1.9, 1-10). Students who failed during their studies took 4.7 years (± 1.0, 4-9), compared to successful students who finished the course

Table 2 - Differences in socio-demographic variables between students who have achieved and not achieved academic success

Variable	Failure (n=1,416)	Success (n=625)	p-value
	M ± SD (range)	M ± SD (range)	
Age	22.3 ± 4.9 (18-50)	21.5 ± 3.9 (18-48)	<.01
Travel to reach university (minutes)	36.2 ± 35.9 (1-240)	40.5 ± 40.2 (1-310)	.027
	N (%)	N (%)	
Gender			
Female	932 (65.8)	443 (70.9)	.028
Male	484 (34.2)	182 (29.1)	
Marital status			
Single	1,014 (93.1)	517 (94.7)	
Married	36 (3.3)	14 (2.6)	
Cohabiting	25 (2.3)	12 (2.2)	.494
Separated	10 (.9)	3 (.5)	
Divorced	4 (.4)	0 (.0)	
Children			
No	1,008 (94.1)	517 (95.7)	.197
Yes	63 (5.9)	23 (4.3)	
Cohabiting with			
Family	579 (53.3)	287 (52.9)	
Other students	405 (37.3)	212 (39.0)	.736
Partner	59 (5.4)	27 (5.0)	
Alone	44 (4.0)	17 (3.1)	
Working status			
No	872 (80.4)	459 (84.7)	
Yes, with priority for the studies	172 (15.9)	72 (13.3)	.061
Yes, with priority for the work	40 (3.7)	11 (2.0)	
High school			
Technical/ Professional	424 (38.9)	159 (29.1)	
Scientific	350 (32.1)	213 (38.9)	
Psycho-pedagogical	139 (12.7)	59 (10.8)	<.01
Literary	102 (9.3)	64 (11.7)	
Linguistic	61 (5.6)	49 (9.0)	
Artistic	15 (1.4)	3 (.5)	

Legend: M = mean; SD = Standard Deviation.

within 3 years. Those who changed courses attended the nursing course for on average 2.3 years (± 1.9, 1-8), the attrition students attended on average for 2.0 years (± 1.6, 1-8), and the dismissed students attended on average for 9.75 years (± 1.5, 9-12).

Predictors of academic success

Correlations between socio-demographic and academic variables with academic success were assessed to identify those variables in the logistic regression model. Age (r = -.083, p <.01), type of high school

Table 3- Differences in assessments among students with different academic backgrounds

	Changed course	Retired	Dismissed	Failed student	Success full student	All students	p-value
	M ± SD (range)						
Pre-admission test	31.1 ± 9.3 (5.0-52.0)	32.6 ± 9.9 (3.0-64.0)	17.0 ± 2.8 (12.0-20.0)	30.9 ± 8.3 (2.0-68.0)	34.3 ± 9.4 (16.0-68.0)	31.8 ± 9.0 (2.0-68.0)	<.01
Time for Degree (years)	2.3 ± 1.9 (1-8)	2.0 ± 1.6 (1-8)	9.8 ± 1.5 (9-12)	4.7 ± 1.0 (4-9)	3.0 ± 0.0 (3-3)	4.3 ± 1.9 (1-10)	<.01
Clinical training exam 1st year grade	24.4 ± 3.6 (18-30)	23.8 ± 4.1 (18-30)	23.0 ± 1.7 (22-31)	25.6 ± 3.3 (10-30L)	26.5 ± 2.9 (18-30L)	25.7 ± 3.3 (0-30L)	<.01
Clinical training exam 2nd year grade	24.9 ± 2.6 (20-28)	27.0 ± 3.0 (24-30)	20.0 ± 0.0 (20-20)	25.6 ± 3.2 (18-30L)	27.2 ± 2.9 (18-30L)	27.2 ± 3.2 (18-30L)	<.01
Clinical training exam 3rd year grade	26.0 ± 2.8 (24-28)	-	-	25.6 ± 3.5 (15-30L)	27.9 ± 2.8 (18-30L)	26.6 ± 3.4 (15-30L)	<.01
Professional license exam grade	-	-	-	95.1 ± 14.7 (11-111)	102.5 ± 6.7 (76-111)	95.8 ± 7.7 (73-111)	<.01

Legend: M=mean; SD= Standard Deviation; L: cum laude.

Table 4 - The correlations between socio-demographic variables, academic background and academic success.

Age	Gender	Marital status	Children	Cohabiting with	Working status	High school	Travel to reach university	Pre-admission test	Clinical raining exam 1st year grade	Clinical 1training exam 2nd year grade	Clinical training exam 3rd year grade
-.083**	-.050*	-.040	.034	.002	-.058*	-.092**	.035	.183**	.176**	.258**	.343**

Legend: *= p < .05; ** = p < .01. Success: 1 = yes, 0 = no; Gender: 1 = male, 0 = female; Marital status: 1= married and cohabiting, 0 = single, separated or divorced; Children: 1 = yes, 0 = no; Cohabiting with: 1 = with other, 0 = alone; Working status: 1 = yes, 0 = no; High school: 1 = Literary, scientific, Linguistic, Psycho-pedagogical, 0 = technical/professional and artistic.

(r = -.092), pre-test admission test grade (r = .183, p < .01), clinical training exam grade in the 1st (r = .176, p <.01), 2nd (r = .258, p <.01) and 3rd (r = .343, p <.01) years, gender (r = -.050, p <.05) and working status (r = -.058, p <.05) had a significant correlation with academic success (Table 4).

Table 5 shows the results of the logistic regression model for the evaluation of academic success predictors. The model shows that there are three variables (the pre-admission test and the clinical training grade in the 2nd and 3rd years) that predict academic success. Nursing students with higher grades on the pre-admission test were significantly more likely (OR: 10.0, 95% CI: 10.020-10.054) to achieve academic success as the students with higher grades on the clinical training exam of the 2nd and 3rd years (OR: 10.0 95% CI: 10.027-10.139; OR: 10.2 95% CI: 10.171-10.294, respectively) (Table 5). This model explains 19.5% (Nagelkerke R^2 = .195, p <.001) of the variance in academic success of nursing students.

Discussion

The study aims were to analyze the variables that predict academic success in students of a Bachelor's Degree program in nursing at a University of Central Italy. Academic success is defined, as in other studies in the national context, as "the ability of the student to graduate on time" (6, 16). The results could be very interesting because the successful student rate, according to D.M. no. 17/2010, is considered, for the universities, a parameter of educational quality and efficiency for accessing public funds.

The sample characteristics are similar to those in other studies (6, 16, 43). Academic success is achieved by 30.6% of students. This rate is lower than the rates found by Dante et al (16) (69.2%), Lancia et al (6) (61.7%), Bulfone et al (46) (53.7%) and Seago et al (34) (91.1%). However, if we refer to studies on other Italian universities, by Bulfone et al (46), Dante et al (16) and Lancia et al (6), we should consider other questions. For example, we should analyze the number of exam sessions during the academic year, the criteria for accessing the course exams, and the prerequisites and criteria for accessing the clinical training exams. The student who has a greater number of chances to take exams during the academic year has a greater probability of passing the exams than a student who has a limited number of sessions without the possibility of further sessions. Another

Table 5- Logistic regression model for the assessment of academic success predictors.

Variable	OR	95% CI		p-value
Pre-admission test	10.037	10.020	10.054	.000
Clinical training exam 1st year grade	.994	.949	10.042	.810
Clinical training exam 2nd year grade	10.082	10.027	10.139	.003
Clinical training exam 3rd year grade	10.231	10.171	10.294	.000
Gender	.981	.730	10.317	.897
Age	.986	.951	10.022	.442
High school	10.022	.754	10.384	.890
Working status	.876	.596	10.290	.503

Legend: OR: odd ratio; 95% CI: confidence interval 95%; Success: 1= yes, 0 = no; Gender: 1 = male, 0 = female; High school: 1 = Literary, scientific, Linguistic, Psycho-pedagogical, 0 = technical/professional and artistic; Working status: 1 = yes, 0 = no.

aspect to take into consideration is that some exams are propedeutical to others: in some universities, the student cannot access the exams of the following year if he/she did not pass all the exams of the previous year, or did not pass the clinical training exams. This can affect academic success. In addition, not in all universities, the strategies for the students are similar, as the didactical support tutor and the clinical tutor in the wards facilitate students' learning. Finally, the criteria for gaining access to clinical experience must be considered. Some students can access the clinical training exam only if he/she has passed all theoretical exams, while other universities have constraints, especially in relation to some disciplines. Therefore, the data relating to the university must be analyzed across the board. Moreover, the percentage of unsuccessful students in our study is extremely high compared to other Italian universities. We should therefore reflect on the possibility of collecting the students' perception about obstacles to academic success.

The student who achieves academic success is - on the average - younger and female, and had attended a literary, scientific or linguistic high school. These findings were already known as it concerns gender (21, 26, 41, 42, 47); as it concerns age, we confirmed some studies' results (6, 22, 26, 30, 31), while disconfirming the findings of McCarey et al (48) and Pryjmachuk et al (7), in which student success rates were higher in older students. We think that younger students usually live with their families without responsibilities, compared to older students who may have a family, children and working status (49). The same reasoning can apply to students with children, who are prevalent among those who fail.

Regarding the type of high school, the results of Lancia et al. (43) are confirmed: students with a scientific background prevail among successful students. However, in our study, among the students who report success are those who have a literary and linguistic degree. In Italy, literary, scientific and linguistic high schools provide a more solid education than other kinds of high schools and, for this reason, facilitate academic success among nursing students

Students who spend more time travelling from home to university are more successful; this information is also present in the study of Martin st al (50). It is possible that such students study while commuting, and/or discuss with their colleagues. This strategy appears to be a factor that facilitates student learning, and it is also important to emphasize that social support, closeness and friendship with someone who attends the same courses can be important (51).

Successful students have a different academic background, with higher grades on the pre-admission test and in the 2nd and 3rd year clinical training exams than students who report failure. This is known in the literature, even though the various authors analyzed different pre-tests used in the university entrance phase and different course exams, and defined academic success differently (52-58).

The findings of our study suggest that we should consider the scores on the pre-admission test. All students who reported a minimum admission pre-test score of 16 points had a high probability of academic success. However, further assessments should be made, especially considering the subject areas that make up the admission test.

In our study, it was shown that, on the average, students who are not successful take an average of 4.67 years to complete the program. In many countries, the nursing course lasts four years, and the proposal of Saiani (59) to the National Conferences of Health Degrees is a suggestion to be considered. We can easily experiment with different course lengths and their outcomes for nursing students.

In our study, 7.3% of students dropped

out. The rates in our study are lower than those found by Destrobecq et al in 2008 (37). We were surprised by the time at which students dropped out on average (the end of the second year) or changed degrees (during the third year). Future studies must analyze the causes that lead students to drop out or change degrees, as well as determine when this occurs. On the other hand, it is necessary to understand the level of preparation of the students when accessing the clinical wards. The theoretical knowledge and passing of the laboratories are prerequisites to enter the clinical wards for training. Clinical knowledge and skills must be considered prerequisites to clinical learning. Only in this way will the universities be able to train highly qualified nurses. It should be recommended that tutoring activities be strengthened, both in clinical wards and in the university, in order to better support the students throughout the course, so that they find the motivation to continue and achieve their course.

Conclusions

New knowledge emerged from this study. First of all, only one-third of the students in an Italian Bachelor's Degree program in nursing achieved academic success. In addition, we added to the international research findings that the clinical training exam grade of the 2nd and the 3rd year of the program are predictors of academic success. Lastly, we confirmed the association of older age, female gender, working status, secondary school type (literary, scientific, linguistic, psycho-pedagogical) and grade on preadmission test with academic success. These data should be explored through an analysis of students' perceptions, but - above all - by comparing some organizational aspects of the various nursing programs in Italy. Regarding clinical training exams, universities should highlight the clinical learning environment. Many improvements can be made in clinical training, such as constantly monitoring the quality of the clinical environment. At the national level, a protocol validation of the Clinical Learning Evaluation Quality Index (CLEQI) has been completed; this tool has the purpose of evaluating the quality of the clinical environment for nursing students (60). In this way, we can assess clinical ward quality for nursing students' programs. The findings should be useful for universities, but also for nurse managers who are involved in clinical training quality and mentorship.

Universities should pay attention to the pre-admission score, to assess the *cut-off* for students with a high likelihood of academic success.

Another important point relates to late drop-out students; according to our data, some students drop out after the clinical training exam, in the second or even in the third year. Also, in this case, researchers should investigate what reasons are behind this late rethinking and whether the reasons relate to the course or to personal aspects.

The academic success of nursing students is a phenomenon studied in all Italian universities. To date, there have been no interventions implemented in Italian universities to increase the academic success and their evaluation over time. Among the reasons is the partial knowledge of predictive factors. This study has contributed, by showing that the clinical training exam is a predictive factor of academic success and, therefore, it could allow for the implementation of strategies to improve academic success.

All these considerations can also allow, at an international level, the development of interventions to increase academic success in nursing students by helping health systems to plan the nursing workforce, universities to optimize the costs of training (8, 15) and to improve their reputation by enhancing the retention of students (11-14).

Riassunto

Variabili che predicono il successo accademico tra gli studenti di infermieristica: Studio longitudinale in un Corso di Laurea in Infermieristica

Background. Il fallimento accademico può avere un impatto negativo sullo studente, sulle Università e sulla pianificazione delle risorse infermieristiche. Lo scopo di questo studio è quello di analizzare i predittori del successo accademico in due corti di studenti del Corso di Laurea in Infermieristica.

Metodo. Questo studio longitudinale ha considerato studenti iscritti ad un Corso di Laurea in Infermieristica. L'Università di Tor Vergata conta 21 Corsi di Laurea in Infermieristica presso altrettante istituzioni sanitarie dell'area romana con un reclutamento medio annuale di 800 studenti. Abbiamo considerate le due corti di studenti che hanno iniziato il corso nel 2011-2012 e 2012-2013, rispettivamente. Il follow-up di queste due coorti è terminato nell'anno accademico 2017-2018. Abbiamo considerato variabili socio-demografiche e accademiche relative alle discipline infermieristiche, il voto al test di ammissione, i voti agli esami di tirocinio al 1°, 2° e 3° anno ed il voto all'esame di abilitazione professionale. La variabile esito è il successo accademico, definito come il conseguimento della laurea nel tempo stabilito; uno studente riporta insuccesso quando cambia corso di laurea, è in ritardo nel completamento degli studi, abbandona il corso o decade per limiti di tempo. La raccolta dei dati è stata effettuata all'ingresso al corso (T0), alla fine del primo anno (T1), alla fine del secondo anno (T2) e alla fine del terzo anno (T3) del corso. Per identificare i fattori che predicono il successo accademico è stata utilizzata la regressione logistica.

Risultati. Il campione è composto da 2.041 studenti, con un'età media di 22.0 anni (± 4.6, 18-50); il 67.4% erano donne. Il 30.6% degli studenti si è laureato in tempo raggiungendo il successo accademico, mentre il 69.4% ha fallito nel completare il corso nei tempi stabiliti: il 5.4% ha cambiato corso di laurea, il tasso di abbandono è stato del 7.3%, lo 0.3% è decaduto, il 18% sta attualmente ancora frequentando ed il 38.4% si è laureato in ritardo. Il voto del test di ammissione (OR: 10.0 IC 95%: 10,020-10,054) e dell'esame di tirocinio al 2° e 3° anno (OR: 10.0 IC 95%: 10.027-10.139; OR: 10.2 IC 95%: 10.171-10.294) sono predittori del successo accademico.

Discussione e Conclusioni. Alcuni studenti cambiano corso nell'ultimo anno, benché l'esame di tirocinio del 2° e 3° anno predicano il successo accademico; queste sono nuove conoscenze prodotte dallo studio. In aggiunta, abbiamo confermato l'associazione al successo accademico dei fattori età, genere, voti nei tirocini e tipo di maturità, nonché del punteggio al test di pre-ammissione. Per queste ragioni l'apprendimento clinico dovrebbe essere una variabile su cui deve essere posta attenzione, così come sarebbe necessario monitorare la qualità delle unità operative come ambienti di apprendimento. Le università italiane dovrebbero impegnarsi a stabilire quale sia il cut-off del test di ammissione che identifica gli studenti con un'alta probabilità di successo accademico.

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