



Analysis of Factors Related to Students' Success in the Professional Nurse Program

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Abstract

It is essential that admitted nursing students complete their degrees and provide safe, high-quality patient care. Identifying factors that may predict student success helps determine the resources needed to support students both academically and psychosocially. This study examined the relationship between selected variables and scores on the Indonesian try-out for the National Nurse Competency Exam using a quantitative descriptive design. Statistical comparisons explored differences in grit scores, calling scores, reasons for wanting to be a nurse, and try-out scores. Two hundred seventy-nine students completed the online form. Regression analysis was used to analyze data and find correlations among experience, attributes, and academic variables. The first-semester GPA, admission scores in Mathematics and *Bahasa Indonesia*, motivations for becoming a nurse, grit scores, and BCS presence in the calling score were significant predictors of the try-out score. These factors all positively influenced the try-out score. In contrast, the BCS presence variable in the calling score had a negative effect on the try-out score. This suggests that when a student scores high in BCS presence, they tend to receive a lower score on the try-out. Of the seven reasons for wanting to become a nurse, only one showed positive significance in the try-out score, relating to a personal decision or calling. The admission process for nursing students should consider Math and *Bahasa Indonesia* skills, along with assessments of grit and motivation to become a nurse. Nursing programs must identify the most suitable approaches that best support nursing students.

Keywords: Nursing Student, Nursing Education, Academic Success

INTRODUCTION

There is a growing movement toward implementing a holistic admission process in nursing education and other healthcare disciplines to cultivate a more diverse healthcare workforce (Sommers et al., 2022). In many underserved communities, a diverse healthcare workforce can significantly enhance overall health (Glazer et al., 2016). A holistic admission process considers a variety of experiences, attributes, and educational metrics of prospective students to attract a more diverse group of candidates (Aul et al., 2022). It is crucial for admitted students to complete their healthcare degrees and deliver safe, high-quality patient care. Therefore, faculty members must identify the resources needed to support student success (Scott & Zerwick, 2015; Glazer et al., 2016).



Identifying the factors that may predict student success will help determine the resources needed to support students academically and psychosocially. In previous studies of first-year nursing students, the study variables accounted for only 34-37% of the variance in the first-semester Grade Point Average (GPA) at the Faculty of Nursing, Universitas Pelita Harapan (Sommers et al., 2019; Sommers & Wirawan, 2019). The researchers recommended further research to explore relationships with other student success variables, such as completing the Professional Nurse program, achieving a score on the Indonesian Try-Out National Nurse Competency Exam higher than the National Passing Score, and passing the Indonesian National Nurse Competency Exam (NNCE).

Nursing programs need a holistic admissions model primarily to create a more diverse healthcare workforce that reflects the patient populations they serve. The holistic admission model developed by the Association of American Medical Colleges (AAMC) in 2013 was adapted for nursing (Scott & Zerwick, 2015). The model involves reviewing students' experiences (including life, community, leadership, healthcare, and cultural/diverse experiences), attributes (such as demographic characteristics, abilities, maturity, goals, and interests), and academic metrics (such as educational background, pre-admission test scores, grades, and standardized tests). According to Scott and Zerwick (2015) and Maude and Kirby (2022), implementing a modified holistic model led to the admission of a more demographically diverse student body.

When implementing a holistic model in nursing education, it is crucial to closely monitor students' academic progress (Glazer et al., 2016). In nursing, more information is needed regarding experiences, qualities, and academic characteristics that can most accurately predict a student's potential for future success (Glazer et al., 2016). This study employed a modified version of the holistic admission model developed by Scott and Zerwic (2015) as a framework for evaluating student progress. In this context, "student success" was defined as achieving a score above the national passing score on the Indonesian Try-out National Nursing Competency Exam.

Grit, a personality quality, is defined as "a perseverance of effort and consistency of interest, as well as the ability to thrive in the face of perpetual challenges and continual change" (Seguin, 2019, p.125). This trait of grit explains why some nursing students achieve academic or clinical success, whereas others do not. Terry and Peck (2020) found that grit increased significantly as students progressed through their second and third years, suggesting that a balance between academic and clinical challenges drove many accomplishments across a diverse student body.

The desire to become a nurse is an essential factor in completing nursing school (Emerson, 2017). A key motivation for pursuing a career in nursing is the opportunity to assist and serve individuals and their families (Sommers et al., 2019). Evidence suggests that perceiving a calling is associated with greater career commitment; therefore, recognizing and encouraging students who feel called to nursing could positively impact the nursing workforce in the future (Emerson, 2017).

Incompetent nursing practice, which is defined as failing to meet professional standards of care or maintain necessary skills, has significant safety, legal, and educational impacts worldwide and in Indonesia. Educational institutions face considerable pressure when their graduates do not meet entry-level professional competencies. Becoming a competent general nurse in Indonesia requires successfully completing a baccalaureate nursing program, a professional nursing program, and passing the National Nurse Competency Exam (NNCE). The NNCE was introduced in Indonesia in 2014 and has served as an exit exam for professional nursing programs since 2021. Students must pass this exam to be recognized as competent general nurses and to obtain a nursing license. Siswadi et al. (2021) found a significant correlation between academic achievement—measured by GPA, English proficiency scores, and try-out scores—and NNCE results. Other factors, including demographic data and student

motivation, showed no significant correlation with exam performance (Siswadi et al., 2021; Natalia & Sinaga, 2021). Tahir et al. (2021) conducted a study to identify factors that predict success on the Indonesian National Nursing Competency Examination. The completion of a standard internship program was identified as the primary predictor of passing.

This study aimed to identify factors associated with nursing students' success. By understanding the factors related to ongoing enrollment in nursing programs, students can receive appropriate support to enhance their success. The insights gained from this study have enabled the Faculty of Nursing to identify the most effective support programs for nursing students, particularly during the professional nursing program, thereby helping them succeed and pass the National Nurse Competency Exam.

METHODS

This study employed a descriptive, quantitative design and was conducted in Indonesia from July to December 2022. The last admission and academic database of nursing students admitted in August 2018, as well as previous research data from 2020, were used. In total, 351 students were admitted to the hospital in August 2018. The inclusion criteria were as follows: an active professional nursing student in July 2022 who had been admitted to the academic nursing program in August 2018, as part of the original dataset and an earlier study. A total of 319 active Professional Nurse program students were admitted in August 2018 and, as of May 2022, agreed to participate in the survey. 279 students completed the online form, yielding an effective response rate of 87.46%.

The study utilized existing admission and academic databases, as well as validated tools, to measure "why I want to be a nurse, grit, and calling."

- 1) Why I Want to Be a Nurse: My desire to pursue a nursing career after completing a bachelor's degree and the professional nursing program is rooted in seven categories identified in previous research (McKenna et al., 2023). These categories include helping or serving others or family; a personal decision or calling; the influence of family, others, or circumstances; contributing to or improving the nursing profession; serving God as a ministry; accepting a scholarship offer; and being a blessing to others.
- 2) Grit Score: The score received on the Indonesian version of the Grit Score upon completing a bachelor's program and continuing with the Professional Nursing program. Scores ranged from 1 to 5. This Indonesian version of the Grit Scale was used in a previous study (Sommers et al. 2022).
- 3) Calling Score: The score achieved on the Indonesian version of the Basic Calling Score upon completing a bachelor's program and undertaking the professional nursing program. The scores range from 4 to 20. This instrument was also used in a previous study (Sommers et al. 2022).
- 4) Try-Out of the National Nurse Competency Exam Score: The score achieved on the Try-Out of the National Nurse Competency Exam after the Professional Nurse Program. The score ranged from 0 to 100, and the national passing score for this year (2022) is 48.33.

Study data were collected via an online form created in Microsoft Forms, a Microsoft survey tool. Each respondent provided self-assessment across multiple scales: Why did I want to be a nurse, grit, and calling? The results of the Try-out of the National Nurse Competency Exam and the National Nurse Competency Exam were received from the National Committee.

The variables were added to the existing dataset, and all identifying information was removed. All analyses were conducted using SPSS, with the significance level set at .05. Regression analysis was utilized to examine the relationship among experience, attributes, academic variables, and student success, as measured at the end of the second semester of the Professional Nurse program (May 2022) for nursing students admitted in August 2018. Statistical comparison studies assessed differences in



students' experiences, attributes, and academic variables at the end of the second semester of the Professional Nurse Program (May 2022) for the 2018 cohort in the Faculty of Nursing.

Bivariate analysis was employed to investigate correlations among experience, attributes, and academic metric variables. Descriptive statistical analysis was used to characterize the data. For continuous variables, means and standard deviations were reported, whereas frequency distributions and percentages were presented for categorical and dichotomous variables. Before analysis, the data were examined for exceptional values, outliers, missing data, and to verify whether they met the assumptions of linearity, normality, non-multicollinearity, homoscedasticity, and independence. List-wise deletion was implemented if the missing data were minimal (< 5%).

This study was approved by the Internal Review Board of Universitas Pelita Harapan (protocol number 009/IRB-UPH/VII/2022). Students' privacy was protected as all data were de-identified in the database, ensuring that no student-identifying information was included. All data were kept confidential and stored on secure servers that were accessible only through password-protected computers.

RESULTS

A total of 279 valid questionnaires were received. Among the respondents, 237 (84.94%) were identified as female and 42 (15.05%) as male. Descriptive statistics for the categorical variables are presented in Table 1. Based on the data obtained, student origins are diverse in various regions of Indonesia. Their high school types also varied, including those focusing on health, social sciences, and vocational education. Of all the students, 75 (26.89%) participated in the pre-nursing program when they were accepted into the nursing school. Half of the students had prior healthcare experience, specifically 157 (56.27%), and most held leadership roles before entering higher education in nursing, with 210 (75.26%) respondents. Additionally, 160 students (57.34%) had no prior experience with community service. Regarding study habits, the majority (187, 67.02 %) reported that they did not study alone. The interview ratings for most students met the established standards, with 198 (70.97%) achieving this.

Table 1. Characteristics of the Respondents (N = 279)

Variable	Group	Frequency (n)	Percentage (%)
Gender	Female	237	84.94
	Male	42	15.05
City of origin	Sumatra	86	30.82
	Java	61	21.86
	Kalimantan	19	6.81
	Sulawesi	39	13.97
	Papua	14	5.01
	Maluku	20	7.16
	Bali and Nusa Tenggara	40	14.33
	Other	10	3.58
Type of High School	Health/ Science high school	228	81.72
	Social science high school	15	5.73
	Health/ Science vocational school	25	8.96
	Social science vocational school	11	3.94
Attending the pre-nursing program	No	204	73.11
	Yes	75	26.89
Previous healthcare experience	No	122	43.72
	Yes	157	56.27
Previous leadership role	No	69	24.73
	Yes	210	75.26



Previous community service	No	160	57.34
	Yes	119	42.65
Study time is alone during first semester	No	187	67.02
	Yes	92	32.97
Rating of admission interview	Meets standard	198	70.97
	Exceeds standard	81	29.03

Concerning why respondents wanted to become nurses, 109 (39.06%) indicated they wished to help or serve others, including their families (Table 2). The second most common response was personal decision or calling (13.62%), followed by the desire to bless others (12.54%). The option to contribute to or improve the nursing profession received the fewest responses, with only 14 (5.01%) selecting it.

Table 2. Frequency Distribution of Reason for Becoming a Nurse (N = 279)			
Variables	Group	Frequency (n)	Percentage (%)
Why I want to be a nurse	To help or serve others or my family.	109	39.06
	Because of a personal decision or calling	38	13.62
	Because of the influence of family, others, or circumstances	33	11.83
	Be a part of or improve the profession of nursing.	14	5.01
	As a ministry and service to God	25	8.96
	Because of scholarship offering	25	8.96
	To be a blessing to others	35	12.54

Table 3 presents the average of several numerical variables collected when students entered the nursing education program at the Faculty of Nursing, including admission scores in Mathematics, English, and *Bahasa Indonesia* (Indonesian language), along with the APM Matrix and the GPA at the end of the first semester. The data from this study included the Grit Score, which had an average of 3.60 with a standard deviation of ± 0.39 . The average score for the presence of BCS on Calling was 3.93 (SD ± 0.79), whereas the BCS Search on Calling Score had an average of 3.99 (SD ± 0.87). The mean score on the Try Out Nurse Competency Test was 58.52 (SD ± 5.90).

Table 3. Mean values of research variables (N = 279)							
Variables	Min	1 st Quartile	Median	Mean	SD	3 rd Quartile	Max
First semester GPA*	2.70	2.04	3.18	3.20	0.22	3.34	3.88
Admission score: Math	5.00	10.00	12.00	12.68	3.83	15.00	29.00
Admission Score: English	9.00	16.00	19.00	20.21	6.35	24.00	44.00
Admission score: Bahasa Indonesia	15.00	23.00	25.00	25.09	3.69	28.00	34.00
Admission score: APM* matrix	9.00	17.00	20.00	19.78	3.38	22.00	31.00
Grit Score	2.30	3.30	3.70	3.60	0.39	3.80	4.80
Calling Score (BCS* Presence)	1.00	3.50	4.00	3.93	0.79	4.50	5.00
Calling Score (BCS Search)	1.00	3.50	4.00	3.99	0.87	5.00	5.00
Try Out Score	42.22	53.89	58.89	58.52	5.90	62.78	71.11

Table 4 presents the regression analysis results for the National Nurse exam try-out scores, including all independent variables. According to the regression analysis, six predictor variables were



statistically significant for the try-out score: first-semester GPA, admission scores in Mathematics and *Bahasa Indonesia*, the reason for becoming a nurse, grit score, and BCS presence in the calling score.

Table 4. Regression analysis of variables (N = 279)

Coefficients	Estimate	Std. Error	T value	P> t
(Intercept)	12.481	5.720	2.182	0.030
First Semester GPA	11.582	1.646	7.035	1.94e-11***
Attendance at the pre-nursing program	0.703	0.832	0.845	0.399
City of origin:				
Java	-0.983	0.942	-1.043	0.297
Kalimantan	-1.501	1.363	-1.101	0.271
Sulawesi	-1.601	1.078	-1.485	0.138
Papua	-0.938	1.586	-0.591	0.554
Maluku	-1.601	1.333	-1.202	0.230
Bali and Nusa Tenggara	-0.437	1.038	-0.421	0.674
Gender:				
1 Male	-1.393	0.942	-1.478	0.140
Type of High School:				
Social science-focused high school	-0.773	1.446	0.534	0.593
Health/Science focused vocational school	-0.799	1.154	-0.693	0.489
Social science-focused vocational school	-2.001	1.655	-1.209	0.228
Admission Score:				
English	-0.004	0.060	-0.080	0.936
Mathematics	0.162	0.089	1.810	0.071*
Bahasa Indonesia	0.157	0.091	1.720	0.086*
APM Matrix	-0.081	0.101	-0.803	0.422
Rating of interview	0.113	0.698	0.163	0.870
Previous healthcare experience	-0.204	0.678	-0.301	0.763
Previous leadership role	-0.466	0.762	-0.612	0.541
Previous community service	0.327	0.658	0.498	0.618
Study time is alone during the first semester	0.489	0.685	0.715	0.475
Why I want to be a nurse:				
Because of a personal decision or calling	2.096	0.993	2.111	0.035*
Because of the influence of family, others, or circumstances	-0.664	1.073	-0.619	0.536
Be a part of or improve the profession of nursing.	-0.598	1.517	-0.394	0.693
As a ministry and service to God	1.966	1.156	1.701	0.090*
Because of the scholarship offering	0.274	1.204	0.228	0.820
To be a blessing to others	-0.233	1.042	-0.224	0.823
Grit Score	1.961	0.908	2.160	0.031*
Calling Score:				
BCS Presence	-0.773	0.457	-1.693	0.091*
BCS Search	0.342	0.379	0.904	0.366

Note: Several categories of categorical variables are baseline and included in the intercept.

The regression analysis results indicated a significant relationship between the predictor and response variables. However, the adjusted R-squared was 0.2929, indicating that only 29.29% of the variability in the try-out score was explained. The variables of first-semester GPA, admission scores in Mathematics and *Bahasa Indonesia*, reasons for becoming a nurse, and grit score all positively influenced the try-out score. Higher scores on these variables will likely result in a passing score on the try-out. Conversely, the BCS presence variable in the calling score negatively impacts the try-out score, suggesting that when a student scores high on BCS presence, they tend to achieve a lower try-out score. Among the seven options for becoming a nurse, only one demonstrated a positive correlation with the try-out score; the second option pertains to personal motivation or a calling.



DISCUSSION

The results indicated that several variables positively influenced try-out scores, including first-semester GPA, admission scores in Mathematics and *Bahasa Indonesia*, “why I want to be a nurse”, and grit. Students who outperform in these areas are likely to achieve high try-out scores. Numerous studies have demonstrated a consistent correlation between academic success in college and the performance of higher-achieving students as measured by cumulative GPA, which persists to a greater extent than that of lower-performing students (Gershenfeld et al., 2016). Gershenfeld et al. (2016) revealed that first-semester GPA is a crucial early indicator of college graduation. In this context, a good score on the try-out scale suggests that students possess cognitive abilities that meet the graduation standards for nurses in Indonesia.

When students begin their first semester of nursing education, they take fundamental courses on anatomy and physiology, basic nursing theories, and fundamental nursing skills. These courses can significantly influence students' understanding of advanced nursing subjects (Susiati et al., 2025). A strong GPA in the early semesters demonstrates that students are mastering their studies, which aids their success in more advanced courses, particularly in nursing, owing to the solid foundation of knowledge they have established. The questions in Indonesia's nursing licensure exam encompass a range of materials, from basic to advanced nursing.

The results of this study indicate that mathematical scores in the admissions process positively affect try-out scores. According to the Hanover Research Report (2016), early literacy and math skills are the most significant predictors of academic achievement. In everyday life, mathematical literacy skills are essential for solving problems encountered and for thinking numerically and spatially to interpret and critically analyze daily situations (Rizki & Priatna, 2019). The ability to demonstrate mathematical competence is a critical component of nursing practice, even amid the technological paradigm shift in healthcare (Jarvis et al., 2021). After several years of college, nursing students with relatively weak mathematical abilities often require greater mathematical competence and self-confidence, which are essential for competent nursing practices (Gunes et al., 2016).

Studies indicate that math proficiency predicts the completion of nursing programs and is a key indicator of success in urban public colleges with diverse student populations (Maley & Rafferty, 2019). These findings suggest that the students possessed strong mathematical skills. Therefore, the ability to think critically and solve problems in practice questions ultimately led to higher scores. The same holds for language proficiency in *Bahasa Indonesia*, also known as Indonesian. *Bahasa Indonesia* is a national language used as a medium of instruction in schools and for competency assessments among Indonesian nurses. Proficiency in *Bahasa Indonesia* impacts the academic language skills necessary for learning at the higher education level. Research indicates that language proficiency, particularly academic language proficiency, significantly impacts students' academic performance (Kalinowski et al., 2020). Nursing programs demand advanced literacy and language skills. Without these, students risk underperforming academically and may struggle to progress successfully in their nursing studies (Glew et al., 2019).

The reason for becoming a nurse is a variable that influences the try-out score analysis, with only one factor showing positive significance. The second reason is a personal decision or calling. When students pursued nursing due to a personal decision or calling, their scores on the nurse competency test try-out tended to be favorable. A calling is defined as a transcendent summons, experienced as originating beyond the self, that leads one to approach a particular life role in a way that seeks to demonstrate or derive a sense of purpose or meaningfulness and prioritizes other-oriented values and goals as primary sources of motivation (Cao et al., 2019).



Students with a calling view their nursing education as a valuable mission, motivating them to engage with the learning process and positively impacting their learning outcomes, as reflected in their competency test try-out scores. Perceived calling may encourage nurses to immerse themselves in their work and is associated with a commitment component (Ziedelis, 2018). Students participate in clinical practice alongside hospital nurses as part of their nursing education programs. A calling or personal decision to become a nurse may drive students to engage in patient care, allowing them to gain more experience and knowledge. This could have influenced their try-out scores for the competency test.

Studies show that individuals with higher grit achieve better outcomes in various areas, including academic performance (Halperin & Regev, 2021; Oducado, 2021). Grit exhibits incremental predictive validity for success measures beyond IQ and conscientiousness (Duckworth et al., 2007). Regression analysis revealed that grit had a positive influence on try-out scores. In a previous study, Sommers et al. (2021) found that nursing students' grit scores in their first semester were associated with their enrollment status at the end of the second year. The concept of grit refers to the extent to which individuals sustain their passion for a goal over an extended period (Halperin & Regev, 2021). In addition to its connection to academic achievement, a study by Bibon (2022) found that grit also helps predict success or failure on licensure examinations. Gritty behaviors are characterized by persistence in efforts to review, practice, and commit time to enhancing one's cognitive abilities (Bibon, 2022).

An interesting finding from the regression analysis of the BCS search variable was that the calling score had a positive influence on the try-out score. The two statements in the BCS search pertain to searching for calling statements. The BCS presence variable in the calling score had a negative impact on the try-out score. This suggests that when students perform well in the presence of BCS, they tend to receive lower tryout scores. The statement made in BCS's presence concerns the existence of a calling. Chen and Zhang (2023) conducted an exploratory study to investigate the direct effects of career calling on the learning engagement of higher vocational nursing students. They found that career calling had a significantly positive impact on nursing students' engagement in learning. Learning engagement is a crucial predictor of academic success.

Further studies are needed to identify how the presence of a calling leads to lower try-out results and how a good score on the search-for-a-calling variable leads to positive try-out outcomes. The quest for a calling itself may motivate individuals to achieve meaningful objectives; for instance, by obtaining try-out scores on competency tests for nursing students. A nursing competency test was used to evaluate cognitive abilities. The results of this study indicate that the potential for calling does not necessarily imply that a person possesses the intellectual skills required to answer try-out questions on a nursing competency test. Sommers et al. (2022) found that students' sense of calling and grit may influence their success. After three years of nursing education, students' calling and grit may evolve. Nevertheless, by the end of the fourth year, both factors have been found to be statistically significant in terms of academic success.

This study has limitations because it only used data from one nursing educational institution, which makes the results not generalizable. Additionally, it only examined relationships between variables or relied on descriptive statistics.

CONCLUSION

The six variables that are statistically significant for the try-out score are the first-semester GPA, admission scores in Mathematics and *Bahasa Indonesia*, the reason for becoming a nurse, the grit score, and BCS presence in the calling score. The first-semester GPA, admission scores in Mathematics



and *Bahasa Indonesia*, the reason for becoming a nurse, and grit score all positively affected the try-out score. If students score well in these variables, they are likely to achieve a good score in the try-out. In contrast, only the BCS presence variable has a negative effect on the try-out score, indicating that students with a high BCS score tend to receive a lower try-out score. Among the seven reasons for becoming a nurse, only one variable had a statistically significant positive correlation with the try-out score, which relates to a personal decision or calling.

The results of this study can identify the component requirements for admitting students to nursing programs and highlight additional programs that best support nursing students, particularly during the first semester and the professional nursing program. This may help them succeed and achieve higher scores on the tryout and/or National Nurse Competency Exam.

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