Examining Academic, Screening, and Structural Correlates of Nursing Licensure Examination Success in a University

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Abstract
The changing landscape of higher education institutions (HEIs) brings new complexities to the dynamics of teaching and learning, which significantly affects graduates' preparation and readiness for national assessment. This study investigates the factors associated with Nursing Licensure Examination (NLE) performance through an analysis of academic, screening, and structural factors among nursing graduates. Drawing empirical evidence from historical data of 204 Nursing graduates, the study probes various factors, such as entrance examination scores, screening assessments, and cumulative academic performance of the graduates in related learning experiences (RLE) and professional courses. Additionally, the curriculum type, preparatory practices, and learning modalities are examined to determine the structural factors influencing board examination results. The inferential analysis reveals that graduates consistently achieved exemplary board examination results, with no variation in performance based on entrance examination scores. However, performance does vary based on screening test results, which include Nursing Aptitude Test (NAT) and battery examination scores. Changes in structural factors, such as pre-board examination setup, the instructional modalities employed, and the curriculum type, also significantly contribute to variation in performance. Finally, the correlation analysis further highlights that the significant correlates of board examination results are the NAT scores, battery examination points, pre-board examination ratings, and performances both in RLE and professional courses. Notably, entrance examination scores did not show a significant impact on examination results. These findings underscore the critical role of targeted preparatory and screening strategies in enhancing success rates in licensure examination.

Keywords: correlation analysis, licensure examination readiness, nursing education outcomes, student performance analysis

Introduction

A key measure of both individual success and the efficiency of educational institutions in producing qualified nurses is performance on the board examination. In the Philippines, the Nursing Licensure Examination (NLE) serves as a gateway for graduates to enter the nursing profession and is the main metric in ensuring they meet the required standards to provide safe and high-quality patient care (Oducado & Penuela, 2014; Pacis et al., 2020). The performance of the graduates in the NLE suggests that those who pass have acquired the necessary knowledge, skills, and competencies through their pre-board training and learning experiences. The primary responsibility for producing professional nurses of such quality falls on educational institutions and universities, where students are taught and trained until they graduate and meet licensure requirements before practicing the profession (De Leon, 2016). Various factors including academic components, screening and admission processes, and institutional support systems within the educational environment influence performance in the NLE (Del Rosario & Estrada, 2010; Navarro et al., 2011; Ong et al., 2012). The actual performance on the licensure examination is an interrelation of different factors covering individual characteristics, academic variables, institutional and programmatic factors, and circumstances affecting the nature of the examination (Dator, 2016).

Subsequently, the disparity of student performances across academics, screening processes, and other key parameters and its impact on licensure examination success has raised these fundamental questions: First, *what are the factors that significantly influence the NLE performances of the graduates in the licensure examination?* This question addresses a pressing problem within the realm of education and highlights the need to understand, identify, and address the underlying determinants of success in the nursing licensure examination. Second, *do the identified factors correlate with NLE outcomes in terms of overall passing performance?* Similarly, this question explores the relationships between the identified determinants and the actual licensure examination performance.

Given the multifaceted nature of success in the licensure examinations, this study investigated the interplay of academic, screening, and structural determinants of NLE outcomes. By identifying the key factors that correlate with NLE outcomes, universities offering the program can develop more targeted interventions to improve overall outcomes.

Related Works

Prior studies provide a context for understanding the goals of the study and highlight how the authors approached the ongoing discourse in this domain.

Challenges Impacting Nursing Education in the Philippines

The role that nurses play in society requires a fusion of certain skills, competencies, sensitivity, compassion, care, and dedication grounded on the comprehensive knowledge they acquired and the practical application they were exposed to (De Leon, 2016). Previous studies using NLE data have reported growing concerns about the state of nursing education in the Philippines (Bautista et al., 2018; Montegrico, 2019; Rosales et al., 2014). Consequently, efforts to improve nursing care in the Philippines led to the adoption of standards aimed at enhancing the skills and competencies of aspiring nurses. The different regulatory agencies in the Philippines, particularly the Commission on Higher Education (CHED), set program standards through policy development, quality assurance, and program

monitoring. As such, there were many revisions in the curriculum for the past years (CHED Memorandum of Agreement, 2008, 2009, 2011, 2017), which led to new or modified content in the nursing curriculum. The changes in the program curriculum continue to encourage curriculum planners and instructional designers to create learning opportunities that can be adapted regardless of the learner types, current settings, and available resources (De Leon, 2016). The outcomes of curricular transformation provide the basis for continuous improvement of future approaches to nursing education (Aul et al., 2021).

The evolving landscape of education significantly influences the delivery of the nursing program and requires adjustments to the changing healthcare environments, the emergence of advanced and disruptive technologies, and pedagogical shifts. In particular, the academic restrictions imposed by the pandemic severely impacted program delivery, as unforeseen changes in healthcare settings disrupted traditional learning and training methods (Rood et al., 2022; Smith et al., 2021). Abrupt shifts in teaching methodologies, from in-person learning setup to online modes, followed by the transition to the hybrid approach affected the preparation and readiness of aspiring nurses for the NLE. This has also caused many institutions offering the program to feel uncertain as the traditional teaching practices that worked well before the pandemic have become indeterminate (Crismon et al., 2021). This situation has forced administrators and faculties in HEIs offering the nursing program to be innovative, flexible, and agile in their learning delivery (Ropero-Padilla et al., 2021) as they transitioned to new learning modalities (Amankwaa et al., 2022; Okunji, 2013). The pedagogical transition to online modality reduced the opportunities for social interactions among students and affected several aspects of their learning experiences (Langegard et al., 2021). However, a study suggests that a hybrid or blended learning approach offers pedagogical benefits to the learners, thereby there are differences in student preferences for modes of education and learning activities which are directly reflected in their performances (Poon, 2013).

On the outside, the surge in nursing job opportunities overseas in the 1990s fueled the rapid expansion of the nursing education sector in the Philippines and led to its commercialization, as evidenced by the increase of nursing schools from 40 in 1970 to around 170 in 1990, and reaching 478 in 2007 (Lorenzo et al., 2007). Similarly, CHED monitoring data indicate a dramatic fourteen-fold increase in nursing enrollment from 27,833 in AY 2000-2001 to 397,195 in AY 2005-2006 and an eight-fold rise in nursing graduates from only 4,409 in AY 2000-2001 to 34,589 in AY 2004-2005 (Lorenzo et al., 2007). On the contrary, the number of students pursuing the program declined over the past years, starting 2009 to 2011 due to the oversupply of nursing graduates (Arends-Kuenning et al., 2015). Nonetheless, the downtrend in enrollment did not last long due to several factors, such as the aging population, the retirement of baby boomers, and increased demand for nurses in other sectors, which resulted in a global nursing shortage (Department of Health, 2017).

Trends in nursing education in the Philippines have been largely affected by the rising and falling demand for Filipino nurses in developed countries, particularly in the United States and Europe (Masselink & Shoou-Yih, 2010; Ortiga, 2018). Based on data from the Philippine Overseas Employment Agency (POEA), 92,277 nurses from the Philippines were deployed to other countries between 2012 and 2016 (Cabanda, 2017), hence starting around 2018 to 2019, nursing enrollment began to soar significantly due to increasing demand for nurses abroad. Locally, there is also a big requirement for nurses as a result of rising demand for healthcare services. According to Statista, in 2023, one public health nurse was serving 5,863 people in the Philippines. Several regions account for the highest nurse-to-population ratio at 7,963

(Statista, 2023). The high demand and the lifting of the moratorium on undergraduate nursing programs by the CHED further fueled the rapid increase in schools offering nursing and led to a significant surge in enrollment from 2020 to the present (Yang, 2022).

Pressured to address ongoing demands for nurses, the continual increase of nursing schools can lead to the decline of the quality of nursing education, as reflected in the unstable passing percentage in the NLE over the past years. Existing data from the Professional Regulation Commission (PRC) show a decline in the NLE passing rates, from 80-90% during 1970-1980, to 41-57% between 1998-2008, and further to 33-57% from 2009-2019 (Bautista et al., 2018; Montegrico, 2019). Since 2021, a significant improvement in the national passing rates has been observed (Professional Regulation Commission, 2021). While the quality of nursing programs can be assessed through several indicators including accreditation level, quality of clinical exposure, and faculty composition, it is still the licensure examination performance that draws the most attention when evaluating the program quality (Gutierrez, 2016; Jeffreys, 2015).

Factors Affecting NLE Performance

Salustiano (2013) and De Guzman and Guy (2013) concur that academic performance is one of the significant parameters that predicts the nursing licensure examination results. Their studies reveal that academic performance demonstrates how students meet the standards of the curriculum. Since the curriculum includes the evaluation of student knowledge, skills, and attitudes, a comprehensive assessment could viably reflect their future licensure examination performance (Salustiano, 2013). Romeo (2013) highlights the influence of critical thinking ability, measured through standardized assessment, on student success or failure in licensure examinations. More so, Palompon et al. (2012) conclude that student capabilities, such as intelligence quotient (IQ), aptitude towards a future task, academic performance, and pre-board examination rating influence their licensure examination performance, with academic performance and pre-board examination rating as strong predictors. Ignacio et al. (2016) confirm that the pre-board nursing examination is a reliable basis for predicting performance in the NLE. In a study by Soriano (2016), the graduates' grades in all the nursing professional subjects are found to be positively correlated with their performance in specific areas of NLE including Health Education and Nursing Research. The relationship of grades in nursing subjects with NLE performance is highly supported by the studies conducted by Navarro et al. (2011) and Neri (2009). Banua (2017) corroborates that academic performance has a profound influence on the NLE, hence students who perform well have a higher chance of passing the licensure examination. Academic performance, which is reflected in the general weighted average (GWA) of the student, emerged as the most significantly correlated academic factor with NLE ratings, with the grade in Nursing Care Management course as the strong predictor (Ignacio et al., 2016; Kiblasan & Ligligen, 2020). Likewise, Llego et al. (2020) identify classroom, clinical, and pre-board performance of the students in a private university as significant predictors of licensure examination. Furthermore, Rosales, et al. (2014) substantiate that preparation for clinical exposure is a critical part of the nursing curriculum since the NLE measures not only the theoretical knowledge of the graduates but also their clinical judgment. Soriano (2016) reveals in his study that the nursing program in a learning institution is considered substandard if a low percentage of their graduates pass the licensure examination, and this could be attributed to institutional factors like faculty competence and the availability of affiliated training hospitals, laboratories, and libraries. In a study by Bautista et al. (2018), they claim that the decrease in the passing rate of Filipino graduates in licensure examinations is an indicator of the declining quality of higher

education institutions in the Philippines, which could be attributed to numerous interplaying factors.

On a global level, prior studies on the predictors of success in licensure examinations were also undertaken. In a study by Davenport (2007), he explores the academic and non-academic variables that have the potential to predict performance in the licensure examination. Academic variables include study habits, such as the number of hours spent studying, academic performance/grades, and IQ, while non-academic variables include demographic variables, stress, number of hours of sleep, and exercise. In another study by Beerman and Waterhouse (2003), the influence of non-academic determinants on licensure examination success, particularly hours of study, is proven to be significant. Twidwell and Records (2017) reveal that standardized assessments effectively influence success in completing the rigorous requirements of the program and attaining success in the first attempt on licensure examinations. Using micro-data, Cappellari (2004) explores the relationship between the type of high school attended (general versus technical; private versus public) and good licensure performance. Geiser and Santelices (2007), however, claim that high school grades are often viewed an unreliable criterion for college admissions and performance, owing to differences in school grading systems. The same study supports the 'de-emphasis' on standardized tests as a basis for program admissions (Geiser & Santelices, 2007). The acquired competencies of the graduates through structured and supervised learning experience or RLE prepare them to figure out real problems in a given clinical scenario where practical knowledge and skills are more effectively assessed (Jacobson, 2008).

Findings in the reviewed studies independently reveal varying insights into the correlates of licensure examination success. Likewise, the existing literature showed limited scope of the factors affecting NLE performance, thereby the authors find it necessary to conduct this study. In addition, numerous efforts have been made to define the factors that influence licensure examination performance; however, limited research using historical data on student performance across different areas and its impact on NLE outcomes has been observed. Against this backdrop, the authors investigated the influence of various parameters, encapsulating different facets related to academic, screening, and structural determinants, on licensure performance, thus providing a better understanding of the issues and concerns about NLE outcomes.

Theoretical Framework Underpinning the Study

Astin's Input-Environment-Outcome (IEO) Model (1993) provides the framework for evaluating the various factors influencing student outcomes. Its wide usability in educational assessment and research makes it highly appropriate for studying determinants of nursing licensure examination success. The key components of the model such as Input (i.e., the characteristics and abilities that the students have before entering the learning environment), Environment (i.e., the educational or institutional settings influencing student learning and development), and Output (i.e., the learning gains or development occurring as a result of student exposure to educational environment) were generally framed within the context of the study.

Methodology

The methodological approach utilized in this study detailed the data sources, analytical techniques, and tools employed to extract meaningful insights.

Research Locale

This study was conducted in a selected private university in the Philippines, which offers the Nursing program under its distinguished 116-year-old college. For more than a century, the college has been known for its proven track record in academic excellence and holistic student development, providing its graduates with a quality education that is globally relevant, innovative, and accessible. Notably, it ensures that graduates in the nursing program are equipped with the knowledge, skills, and competencies, and they perform outstandingly in the NLE. This is evident in the remarkable board performance of its graduates as it consistently achieves 100% passing rates and produces topnotchers, hence the selected private university serves as an ideal environment for studying the various determinants of NLE outcomes. Guided by the theory underpinning this study and utilizing the five-year data requested from its different units, the determinants that have likely influenced the NLE performance of the selected university's Nursing graduates were explored.

Data Extraction

Data extraction was done in line with the objectives and research questions of this study. The evidence covered the graduates' academic profiles including entrance examination scores, screening interview results, Nursing Aptitude Test (NAT) scores, general weighted average (GWAs/GPAs) for first-year academic courses, pre-board performance ratings, GWAs both for RLE and Nursing professional courses, overall GWAs, and NLE scores as well as the institutional support which includes the curriculum design/type and learning environment. Both the authors and data owners adhered to a clear data extraction protocol to reduce bias and involved a third reviewer to resolve discrepancies.

Data Collection

In the initial phase of the study, the first wave of data covered the 204 licensure examination takers for five years, all of whom successfully passed the NLE. The authors then conducted a retrospective-records review of the extracted data. After cleaning, the data was reduced to 129, forming the final dataset, which included only those with complete or valid entries. Data exclusions were done to ensure accuracy, validity, and reliability of findings and to maintain consistency which may be negatively impacted by duplicate instances or incomplete entries. Careful assessment was done in this process to maintain data integrity.

Data Analysis

A descriptive, inferential, and correlational research design was used to: (1) describe the profiles of the NLE board takers and test for significant differences, (2) identify the determinants of NLE performance, and (3) determine the relationships between the NLE performance of the board takers and the identified determinants.

Results and Discussion

The key characteristics and emerging patterns of the filtered dataset, comprised of records of the 129 board takers, were analyzed to highlight significant findings and insights.

Table 1: Descriptive Information of the 129 Nursing Board Takers

Variable	Group	Frequency	Percentage
Entrance Examination Score	Above Average (AA)	7	5.4%
	High Average (HA)	31	24.0%
	Average (A)	77	59.7%
	Low Average (LA)	10	7.8%
	Below Average (BA)	4	3.1%
Screening Test Result	Passed 3 screening (A)	71	55.0%
	Passed 2 screening (B)	47	36.4%
	Passed 1 screening (C)	11	8.5%
Curriculum Design/Type	Old Curriculum	93	72.1%
	New Curriculum	36	27.9%
Learning Modality	Hybrid	93	72.1%
	In-person	36	27.9%

Table 1 shows an overview of the distribution of the board takers based on the results of their entrance examination and screening tests. Out of the 129 board takers, 7 had level AA in the entrance examination, accounting for 5.4% of the total. Thirty-one board takers made it to level HA, representing 24.0% of the total. Seventy-seven board takers were in level A, comprising the majority with 59.7% of the total. Ten board takers got level LA, accounting for 7.8% of the total, while four board takers got level BA, representing 3.1% of the total. In terms of screening, the board takers underwent three screening tests: an interview, the NAT (with a minimum 80th percentile requirement), and maintaining a GWA of at least 2.0 for required academic courses during their first year in the university. A total of 71 board takers passed all three screening tests, representing 55.0% of the total, while 47 board takers passed two screening tests, accounting for 36.4% of the total. Eleven of the board takers passed only one screening test, which makes up for the remaining 8.5% of the total. Furthermore, the nursing board takers were trained under two different curricula: CMO No. 14 Series 2009 and CMO No. 15 Series 2017. In the old curriculum, there were 93 board takers, accounting for 72.1% of the total, while in the new curriculum, there were 36 board takers, representing 27.9% of the total. Likewise, the board takers experienced two learning modalities: hybrid and in-person. Ninety-three board takers, or 72.1%, had experienced the hybrid modality, which was a combination of in-person and online learning for their classes and related learning experiences. Meanwhile, 36 board takers, or 27.9%, had experienced solely the in-person modality.

Inferential Analysis

The observed differences between variables were analyzed by employing inferential statistical methods. The identified performance parameters were categorized into three: *Student Assessments*, *Program Interventions*, and *Student Academic Profiles*.

Table 2: Inferential Analysis of Factors on Student Assessments Affecting NLE Scores

Test Factor	NLE Performance per Group	Test Statistic	p-value	Significance
Entrance Examination Score	Group AA (83.5 ± 2.46) Group HA (84.8 ± 2.45) Group A (83.5 ± 2.16) Group LA (83.5 ± 1.54) Group BA (83.0 ± 3.83)	7.24	.129***	Not significant
Screening Test Result	Group A (84.6 ± 2.14) Group B (83.0 ± 2.05) Group C (82.1 ± 2.49)	19.9	< .001***	Significant

***p < .05

For student assessments, there were two variables considered in measuring the capability of the students to pursue the nursing program and eventually pass the NLE such as the *Entrance Examination* and *Screening Tests*. Table 2 presents the mean NLE scores and standard deviations for each group of board takers. The highest mean NLE score (M = 84.8) is obtained for Group HA, while the lowest mean NLE score (M = 83.0) is obtained for Group BA. The mean NLE scores show little disparity among the five groups. Notably, the standard deviation (SD = 1.54) for Group LA indicates less variability in performance, while the standard deviation (SD = 3.83) for Group BA suggests greater variability. Group AA (SD = 2.46) and Group HA (SD = 2.45) have almost similar variability, however, Group A has slightly lower variability (SD = 2.16) compared to the other two groups. An analysis using Kruskal-Wallis test revealed that there is no significant difference (p = .129) and no variations between the NLE performances of the five groups. They have fairly the same performance in the NLE regardless of their entrance examination results. This is supported by Geiser and Santelices (2007) suggesting a 'de-emphasis' on standardized tests in determining college admissions. The table also provides the summary statistics for three groups labeled A, B, and C, indicating their overall performances in the screening tests. Among the three groups, Group A has the highest mean NLE score (M = 84.6), followed by Group B (M = 83.0) and Group C (M = 82.1). The standard deviations demonstrate that there is less variability in NLE scores for Group A (SD = 2.05) than Group B (SD = 2.14) and Group C (SD = 2.49). The Kruskal-Wallis test results revealed a significant difference (p < .001) and variations between the NLE performances of the three groups. Palompon et al. (2012) confirmed that student capabilities, such as IQ, aptitude towards a future task, and academic performance, have influences on NLE performance.

Table 3: Inferential Analysis of Factors on Program Interventions Affecting NLE Scores

Test Factor	NLE Performance per Group	Test Statistic	p-value	Significance
Curriculum Type	Old Curriculum (82.8 ± 2.40) New Curriculum (84.2 ± 2.16)	1119	.004***	Significant
Learning Modality	Hybrid Modality (82.8 ± 2.40) In-person Modality (84.2 ± 2.16)	1119	.004***	Significant
In-house Review with Pre-Board Exam	Yes (Pre-pandemic) (83.8 ± 2.30) No (Pandemic) (81.6 ± 3.25)	1755	< .001***	Significant

***p < .05

For program interventions, there were two main variables considered, which have direct and/or indirect effects on NLE outcomes namely *Curriculum Design/Type*, *Learning Modality*, and *In-House Review with Pre-Board Examination*. Table 3 shows the mean NLE

scores of the two groups based on implemented curriculum design/type. For the old curriculum, the mean NLE score is 82.8, while for the new curriculum, it is 84.2. This suggests that the group trained under the new curriculum performed better than the group trained under the old curriculum. For the new curriculum, the standard deviation is 2.16, while for the old curriculum, it is 2.40, suggesting that the group under the new curriculum had relatively more homogeneous performance than the group under the old curriculum. An analysis using the Mann-Whitney T-test revealed a significant difference ($p = .004$) and variations between the NLE performances of the two groups. Aul et al. (2021) deduced that the positive outcomes of curricular transformation serve as a platform for continuous improvement of future approaches to nursing education, hence validating the findings. Similarly, the table shows the mean NLE scores of the two groups based on learning modality. For the in-person modality, the mean NLE score is 82.8, while for the hybrid modality, it is 84.2. Although the difference is relatively small, this indicates that the group who experienced the hybrid modality performed better on the NLE than the group who underwent the in-person modality alone. For the in-person modality, the standard deviation is 2.40, while for the hybrid modality, it is 2.16. This suggests that the group in the hybrid modality had relatively more homogeneous performance compared to the group in the in-person modality. The Mann-Whitney T-test results revealed a significant difference ($p = .004$) and variations between the NLE performances of the two groups. The pandemic has driven HEIs offering health-related courses to be innovative, flexible, and agile (Ropero-Padilla et al., 2021) as they transitioned to new learning modalities (Amankwaa et al., 2022; Okunji, 2013), and this had an impact on student development. The table also shows the mean NLE scores of the board takers based on whether they had in-house review with pre-board examination or not. The mean NLE score for those who had an in-house review is 83.8, while for those who did not, it is 81.6, revealing a better performance by the first group than the second group. For those who had an in-house review, the standard deviation is 2.30, while for those who had not, it is 3.25. The standard deviation is notably lower for the group who underwent in-house review with pre-board examination, indicating a more homogeneous performance than the other group. The Mann-Whitney T-test results also revealed a significant difference ($p < .001$) and variations between the NLE performances of the two groups. Pre-board or mock board examination turned out to be useful in influencing the graduates' performance in the actual NLE (Ignacio et al., 2016).

The academic profiles serve as an invaluable resource to investigate various aspects of student performance and effective teaching methodologies, hence assessing student academic progress and achievements is paramount in this study. For the student academic profiles, there were three related variables considered, namely *GWA for Related Learning Experience*, *GWA for Professional Courses*, and *Overall GWA*.

Table 4: Differences in GWA for Professional Courses, GWA for RLE, and Overall GWA Between Hybrid and In-Person Groups

Variable	Academic Performance	Test Statistic	p-value	Significance
GWA for Professional Courses (PC)	Hybrid (1.63 ± 0.107) In-person (1.89 ± 0.137) *Both Groups (1.70 ± 0.164)*	181	< .001***	Significant
GWA for Related Learning Experience (RLE)	Hybrid (1.61 ± 0.102) In-person (1.87 ± 0.129) *Both Groups (1.68 ± 0.159)*	209	< .001***	Significant
GWA for all Academic Courses/Overall GWA (O)	Hybrid (1.64 ± 0.117) In-person (1.88 ± 0.145) *Both Groups (1.71 ± 0.167)*	301	< .001***	Significant

***p < .05

Table 4 presents the mean GWAs of all the board takers for RLE (M_{RLE} = 1.68), professional courses (M_{PC} = 1.70), and all academic courses (M_{O} = 1.71). Mean GWAs are consistently high for these performance metrics, thereby showing the board takers' good academic performances. The low standard deviations suggest homogeneous performance among the board takers. The performance of the group in hybrid learning ($M_{H\text{-}RLE}$ = 1.61, $M_{H\text{-}PC}$ = 1.63, and $M_{H\text{-}0}$ = 1.64) is better than the group in in-person classes ($M_{I\text{-}RLE}$ = 1.87, $M_{I\text{-}PC}$ = 1.89, $M_{I\text{-}O}$ = 1.88). For their RLE, the standard deviation of the group who attended hybrid classes ($SD_{H\text{-}RLE}$ = 0.102) is lower than the group who participated in in-person classes ($SD_{I\text{-}RLE}$ = 0.129), indicating a more homogeneous performance for the first group. The same is observed in the obtained mean GWAs and standard deviations for professional courses ($SD_{H\text{-}PC}$ = 0.107 for the hybrid group and $SD_{I\text{-}PC}$ = 0.137 for the in-person group) and for all academic courses ($SD_{H\text{-}0}$ = 0.117 for the hybrid group and $SD_{I\text{-}O}$ = 0.145 for the in-person group). As stated in a study by Langegard et al. (2021), the pedagogical transition to online modality reduced the opportunities for more engaging social interactions among students but otherwise offered pedagogical benefits. The inferential analysis further revealed a significant difference (p < .001) and variations between the academic profiles of the two groups of board takers, particularly in GWAs for RLE, GWAs for professional courses, and overall GWAs. As Poon (2013) affirmed, there is variability in student preferences for education forms and learning activities, which are often reflected in their performances.

Correlational Analysis

The results of correlation analysis present the potential associations between various factors and the significance of the observed relationships, hence uncovering meaningful patterns for predicting NLE performance. The nominal variables such as entrance examination score and screening test result were converted into quantitative values through appropriate coding to facilitate correlation analysis. Furthermore, to maintain interpretability and consistency, the academic performance variables, particularly GWA for RLE, GWA for professional courses, and overall GWA, were transformed using negation in the analysis.

Table 5: Correlation Analysis of Predictors of NLE Scores

Independent Variable (IV)	Dependent Variable (DV)	Correlation Coefficient (r)	p-value	Significance
Entrance Examination Score	NLE score	0.173	.082***	Not significant
Screening Test Result	NLE score	0.394	< .001***	Significant
Pre-board Exam Score	NLE score	0.688	< .001***	Significant
GWA_{RLE}	NLE score	0.588	< .001***	Significant
GWA_{PC}	NLE score	0.625	< .001***	Significant
$GWA_{Overall}$	NLE score	0.632	< .001***	Significant

***p < .05

Table 5 indicates that entrance examination scores had a weak correlation with NLE scores (r = 0.173, p = .082), and was not statistically significant. This suggests that the entrance examination score was not a strong predictor of success in the NLE. Geiser and Santelices (2007) asserted that reducing the emphasis on standardized tests in college admissions is crucial, as this is often seen as a less reliable criterion for NLE performance. In contrast, the screening test results showed a moderate positive correlation with NLE scores (r = .394, p < .001), indicating that they had an impact on NLE performance. As Salustiano (2013) pointed out, integrated with the curriculum is the evaluation of student knowledge, skills, and attitudes, which are measured through comprehensive assessment. Among all the academic performance indicators, the pre-board examination scores had the strongest correlation with NLE performance (r = .688, p < .001), significantly concluding that pre-board examination performance influences NLE scores. In a study by Ignacio et al. (2016), it was inferred that mock board examination is associated with success in the NLE. Additionally, GWA in RLE (GWA_{RLE}) and GWA in professional courses (GWA_{PC}) had moderate positive correlations with NLE scores (r = .588 and r = .625 respectively, both with p < .001), further supporting the assertion that academic performance in both theoretical and practical components of the nursing curriculum is crucial for licensure success. Jacobson (2008) inferred that what the graduates learned in the RLE is essential as these competencies help board takers figure out real problems in a given clinical scenario. Likewise, the correlation of grades in nursing subjects with NLE performance is significantly supported by the studies conducted by Navarro et al. (2011) and Neri (2009). The overall GWA ($GWA_{Overall}$) also had a significant correlation with NLE scores (r = .632, p < .001), reinforcing the importance of consistently good performance in the program. According to Banua (2017), academic performance was found to have a great influence on the NLE, hence students who perform well in nursing school are most likely to pass the NLE.

Conclusion

The descriptive, inferential, and correlational analyses revealed insightful perspectives into the various factors influencing NLE performance based on the examined historical data. First, entrance examination scores had no significant influence on NLE performance as all graduates passed the NLE regardless of their entrance examination results. Taking these results into account, the university must explore other comprehensive methods of evaluating applicants to better assess their potential for success both in the nursing program and NLE, such as portfolio assessment, structured interviews, pre-admission performance tasks, and situational judgment tests in basic healthcare.

On the contrary, screening test results showed that the moderate positive correlation with NLE performance was significant, which suggests that the comprehensive screening

assessments the graduates underwent gauge their readiness and success in the licensure examinations. In light of this, the university must strengthen the existing screening processes to better identify students who may need additional support in terms of further developing their potential to perform better in the NLE.

Pre-board examination scores demonstrated the strongest correlation with NLE outcomes, which highlights the importance of rigorous preparatory assessments in enhancing licensure performance. Participation in an in-house review with pre-board examinations was significantly associated with NLE scores, which reinforces the effectiveness of structured review programs in preparing aspiring nurses for licensure examinations. Developing and implementing more comprehensive preparatory programs that focus on the essentials for NLE success, such as critical thinking and clinical skills can greatly contribute to licensure examination success.

Academic performance indicators, particularly GWAs both for RLE and professional courses, showed moderate positive correlations with NLE scores. These outcomes emphasize the significance of a strong theoretical foundation combined with practical training in ensuring graduates' readiness for the NLE. High academic performance is better achieved by ensuring that clinical exposure is well-integrated into the curriculum, coupled with clear monitoring of the student progress both in classroom and clinical settings. More so, the faculty members are the curriculum implementers, therefore continually providing training and professional development opportunities will equip them with the best teaching practices and expose them to cutting-edge technologies, hence constantly aligning their know-how with the global standards.

The graduates who were trained under the enhanced nursing curriculum outperformed those who were trained under the old curriculum, highlighting the positive impact of curriculum enhancement on NLE success. Given these outcomes, it is important to establish a regular review process to integrate the current healthcare best practices, emerging healthcare trends, and evidence-supported methods into the curriculum to ensure that the graduates are equipped with the knowledge, skills, and competencies to pass the NLE. Moreover, the graduates who engaged in hybrid learning performed better than those who participated solely in in-person learning, therefore incorporating learning environments that cater to diverse learning needs can be more beneficial.

Future research may explore additional factors influencing NLE outcomes like faculty teaching effectiveness, clinical exposure quality, and psychological preparedness to provide a more comprehensive understanding of the determinants of licensure examination success in nursing education.

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