Original Research Article

Self-Perceived Competence of Graduating Nursing Students In Pharmacology E-Learning

ABSTRACT

Background: Nurses' competence is based on the knowledge and skills taught to them. Their training experiences enable them to acquire the knowledge, skills, and attitude for providing nursing care. E-learning is becoming a more popular format for formal education. With the rapid development of technologies and applications that enable and enhance online instruction, this newly popular learning mode is expected to thrive in the future.Drug administration is a critical nursing function with potentially dangerous consequences if errors occur (Ayorinde & Alabi, 2019), and it has been recorded as one of the common risks to patient safety

Purpose: This study aimed to determine the self-perceived competence among graduating nursing students in Pharmacology E-learning at Emilio Aguinaldo Colleg- Manila and explore potential relationship in competence based on demographic profiles and their Knowledge, Skills, and Attitude

Methods:The study utilized a quantitative research design, which involved collecting data through self-reported measures administered to graduating nursing students. Graduating nursing students were surveyed to assess their knowledge, skills, and attitude towards medication management.

Results.Demographic information, including age, place of origin, and Pharmacology semestral grade, were also collected. This study further examined the significant relationship between demographic information, and self-perceived competence in terms of knowledge, skills, and attitude. The respondents were found to be only significant by their semestral grade, and the majority of the sample received very satisfactory to excellent remarks. These findings indicate that Pharmacology E-learning had no adverse impact on the performance of graduating nursing students in terms of their pharmacology competence.

Conclusion: The study revealed that most of the respondents, consisting of forty-one (41) fourth-year BS Nursing students at Emilio Aguinaldo College - Manila, was twenty-one (21) years old and above, with 73.17% living in urban areas and 26.83% from rural regions. The students performed well in their Pharmacology subject, with most of them received Excellent to Very Satisfactory grade range and no failing grades indicating that the teaching and learning process of the subject was implemented effectively and competently patterned from the mandates of Commission on Higher Education's (CHED) E- learning implementation.

Keywords: Nursing education, graduating nursing students, self-perceived competence,Pharmacology E-learning

1.0 Introduction

Nurses' competence is based on the knowledge and skills taught to them. Their training experiences enable them to acquire the knowledge, skills, and attitudes for providing nursing care because a large part of nursing education is carried out in clinical environments. Since nursing is a performance-based profession, clinical learning environments play an important

role in the development of professional abilities and preparing nursing students to enter the nursing profession and become registered nurses (Jamshidi, Molazem, Sharif, et al, 2016).

E-learning is becoming a more popular format for formal education. With the rapid development of technologies and applications that enable and enhance online instruction, this newly popular learning mode is expected to thrive in the future. Nursing education, on the other hand, combines theoretical and practical instruction to help nurses develop professional skills and knowledge. Traditionally, these skills and knowledge were imparted through in-person lectures, laboratory instruction, and clinical rotations, which would be a problem in an online setting because they would not be able to experience hands-on skill performance and evaluation (Kim, Kim, Lee, & Lee, 2021). On-site learning refers to instruction that takes place at a physical location of an institution, such as a classroom, lecture hall, or laboratory, where students have direct access to and contact with their instructors. The face-to-face element of campus learning with human interaction, eye contact, facial expressions, and verbal cues is generally agreed to be essential in encouraging student-lecturer interaction and engagement in the learning process. However, when a COVID-19 pandemic occurred, maintaining and continuing learning became critical and difficult because everything had to be learned online and by yourself. One of the critical aspects of nursing that has been difficult to learn online and without face-to-face simulation is drug dosage calculations, and learning how to calculate drugs is an essential skill for nurses to perform their duties more responsibly and with commitment (Mukasa et al., 2021). E-learning has several advantages, such as flexibility, cost-effectiveness, and accessibility. However, it also has limitations, such as the lack of social interaction and hands-on experience, which can affect the development of critical competencies. As a result, it is crucial to assess the effectiveness of E-learning in developing essential skills such as drug dosage calculations among nursing students.

Drug administration is a critical nursing function with potentially dangerous consequences if errors occur (Ayorinde & Alabi, 2019), and it has been recorded as one of the common risks to patient safety. Inaccurate doses can result in patient morbidity and mortality. In which, it requires the use of both numerical and conceptual calculation skills, where numerical skills are the knowledge and ability to use formulas, perform mechanical calculations, and follow rounding and conversion rules, while conceptual skills are required to recognize the desired amount of medication and the strength of the supply in order to calculate the dose needed (Toney-Butler & Wilcox, 2020).Nurses must be able to calculate accurate drug dosages in order to administer drugs to patients safely, as they are responsible and accountable for making sure accurate drug doses are administered to patients. Knowing how to calculate drugs increases a nurse's confidence in nurses' abilities as a healthcare professional, allowing nurses to perform their duties more responsibly and with dedication (Institute of Health and Nursing Australia, 2022). However, it continues to be a challenge for nursing students, particularly graduating students, as their ability and level of knowledge in performing drug dosage calculations will be tested both as students and when they become nurses in clinical or hospital settings (Lazare, 2018).

This study aims to investigate the competence in Pharmacology E-learning among graduating nursing students. The results of this study will provide valuable insights into the effectiveness of E-learning in developing essential competencies in healthcare education and inform future educational practices.

2.0 Methods

2.1 Research Design

This study is a descriptive correlational research design whose primary objective is to characterize the relationship between two or more variables without attempting to manipulate them. According to Creswell (2019), a descriptive correlational design is a research design used to explore the relationships between two or more variables. In this design, researchers aim to describe and examine the patterns of relationships between variables without manipulating them or establishing causality. In relation to the aims of the study, the variables of interest are the self-perceived competence of graduating

nursing students after they finished their Pharmacology E-learning set-up amidst the COVID-19 pandemic. This study as this allowed the researchers to determine the competence according to self-perception of graduating nursing students in Pharmacology E-learning, while examining the relationship between the demographic profile of the respondents and their self-perceived competence based on their knowledge, skills, and attitude. As far as the study is concerned, the characteristics of quantitative design are the most appropriate for the sample processing of quantitative data related to this study.

2.2 Population/Sample and Sampling Technique

The population of this study, the researchers aimed to collect data from the graduating nursing students. The sample population was drawn from the fourth (4th) year students of Bachelor of Science in Nursing (BSN) batch 2022–2023 at Emilio Aguinaldo College—Manila (EAC-M) who completed their Pharmacology class through E-learning set-up during the school year 2020 to 2021. It is only composed of one (1) section, forty-one (41) students, thirty-eight (38) of them are females and three (3) are males. Upon distribution of the survey questionnaire, forty-one (41) graduating nursing students who are currently enrolled according to the list of enrollees from the nursing department agreed to participate voluntarily.

This study utilized the purposive sampling method for choosing the respondents where the graduating nursing students of Emilio Aguinaldo College - Manila were chosen considering their qualities fit as the sample's criteria. Moreover, this sampling technique enabled the researchers to use their judgment to decide the participants for the study.

3.0 Results and Discussion

The profile of the respondents are grouped according to age ranges from twenty (20) years old and below to twenty-one (21) years old and above, with places of origin in rural and urban areas, including Pharmacology semestral grades; and their significant relationship were interpreted in terms of their knowledge, skills, and attitude of the graduating nursing students' competence after completion of their Pharmacology E-learning class in S.Y. 2020 to 2021 at Emilio Aguinaldo College - Manila.

Table 1. Profiles of the Respondents grouped according to Age.

Age	Frequency	Percentage
20 yrs. old and below	0	0.00%
21 yrs. old and above	**41**	**100.00%**
Observations	41	100.00%

Under Table 1, the data reveals that out of the forty-one (41) respondents who are fourth-year BS Nursing Students at Emilio Aguinaldo College - Manila, the majority, comprising 100% of the sample study, were aged twenty-one (21) years old and above. Since there is only one group of data, the result in this table plainly suggests that substantial relationships cannot be done, and the result of interpretation is not significant. To support this finding, Toledo (2021) argued that due to the Commission of Higher Education's (CHED) implementation of K-12, students from the batch academic year 2020 up to present may graduate at the age of 21-22, which is the optimal age of graduating students.

Table 2. Distribution of Respondents according to Place of Origin

Place of Origin	Frequency	Percentage
Urban	**30**	**73. 17%**
Rural	11	26.83 %
Observations	41	100.00%

Under Table 2. it indicates that 73. 17 % (30 students) of the participants live in urban areas, while 26. 83 % (11 students) are from rural areas. The sample size consisted of forty-one (41) graduating nursing students.To support this finding, the geographical location of the college affected the chosen school of the respondents since it is readily accessible and located in the urban area. Also, according to Schiess & Rotherham (2015), students who live in rural areas may be less prepared for college than their non-rural peers, which may lead them to decide not to enroll in college yet.

Table 3.The Pharmacology Semestral Grade of Graduating Nursing Students in Pharmacology class through E-learning set-up (Academic Year 2020-2021)

Pharmacology Semestral Grade	Frequency	Percentage
1-1.24 (Excellent)	**8**	**19.51%**
1.25-1.49 (Superior)	**10**	**24.39%**
1.50-1.74 (Very Good)	4	9.75%
1.75-1.99 (Good)	3	7.32%
2-2.24 (Very Satisfactory)	**12**	**29.27%**
2.25-2.49 (Satisfactory)	2	4.88%
2.75-2.99 (Fair)	1	2.44%
3-4.99 (Pass)	1	2.44%
Observations	**41**	**100.00%**

Under Table 3., the result shows the distribution of Pharmacology Semestral Grades of forty-one (41) fourth-year nursing students from Pharmacology class. The grades are divided into different categories based on the range of scores. However, the top 3 higher marks that the students had, are the following: twelve (12) students got a grade of 2-2.24, which is Very Satisfactory. This category has a weighted mean of 29.27%, showing that these students

performed very satisfactorily in the subject. Next, ten (10) students got a grade of 1.25-1.49, which is labeled as Superior, and this category has a mean of 24.39%, showing that these students performed superiorly in the subject. Then, eight (8) students got a grade of 1-1.24, which is Excellent, and this category has a mean of 19.51%, indicating that the group performed excellently in this subject. Moreover, the result shows that most of the students performed Very Satisfactory. Additionally, there are no students who received failing grades, indicating that the teaching and learning process in the Pharmacology class were effective.Furthermore, Emilio Aguinaldo College - Manila's Student Handbook (2017) supports that most of the respondents performed very satisfactory in the Pharmacology subject based on the respondent's final point grade while being matched in the handbook's equivalent and description of the semestral grades.

Table 4. The Self-Perceived Competence results of Graduating Nursing Students in Pharmacology E-learning

SELF-PERCEIVED COMPETENCE	MEAN	PERCENTAGE
KNOWLEDGE	2.7982	32.67%
SKILLS	2.9269	34.17%
ATTITUDE	2.8402	33.16%
TOTAL	**8.5652**	**100%**

Under table 4, the results show that Self-perceived competence were divided into three categories which are knowledge, skills and attitude to determine the performance of graduating nursing students. The results show that the Knowledge component has a mean score of 2.7982, indicating that students perceive their understanding of pharmacological concepts to be on average consistent with this score. This aspect constitutes around one-third (32.67%) of the comprehensive score for self-perceived competence. Furthermore, the mean value of 2.9269 attributed to the Skills Component suggests that students at this level possess practical pharmacology skills, encompassing tasks such as medication administration and hands-on application. This aspect constitutes about one-third (34.17%) of the comprehensive self-perceived competence score. Lastly, the mean score of 2.8402 reflects students' attitudes toward pharmacology. The importance of this aspect becomes apparent due to its contribution of approximately one-third (33.16%) to the broader evaluation of self-perceived competence.Upon aggregating these three components (2.7982 + 2.9269 + 2.8402), the total self-perceived competence score amounts to 8.5652, equivalent to 100%.

Overall, the table indicates that, within the framework of Pharmacology E-learning, graduating nursing students perceive their competence most prominently in the Skills, followed by Attitude and Knowledge. The cumulative 100% total represents a thorough assessment of their self-perceived competency across these critical criteria. To support this finding, a research conducted at Visayas State University (2023) highlights that a considerable portion of Filipino nursing students affirmed a substantial positive influence of online learning platforms on their perceived essential skills. This observation corresponds with the outcomes of the present study.

Table 5. The significant relationship on the Self-Perceived Competence of Graduating Nursing Students in Pharmacology E-learning according to Place of Origin

Results	r Value	p Value	Decision	Interpretation
K: Rural vs Urban	0.2419	0.3946	Retain Ho	Not Significant
S: Rural vs Urban	0.1795	0.3567	Retain Ho	Not Significant
A: Rural vs Urban	0.2781	0.1625	Retain Ho	Not Significant
Overall KSA: Rural vs Urban	**0.1977**	**0.1625**	**Retain Ho**	**Not Significant**

Under Table 5, the result indicates that at a 0.05 significance level, it concluded that no significant relationship between the means of rural and urban areas has shown on their self-perceived competence in Pharmacology E-learning in terms of their knowledge, skills, and attitude. This implies that the self-perceived competence of the respondents is not related and affected by the place of origin they are coming from.

To support the findings, there was a study in 2018 which showed that students from the University of Louisville's Cardinal Covenant program were evaluated using data from the survey and performance and revealed no significant relationship between urban and rural students.

Table 6. The significant relationship on the Self-Perceived Competence of Graduating Nursing Students in Pharmacology E-learning according to Semestral Grade

Results	r Value	p Value	Decision	Interpretation
Semestral Grade and K	-0.0696	0.0000	Reject Ho	Significant
Semestral Grade and S	-0.1208	0.0000	Reject Ho	Significant
Semestral Grade and A	-0.0271	0.0000	Reject Ho	Significant
Overall Semestral Grade and KSA	**-0.0757**	**0.0000**	**Reject Ho**	**Significant**

Under Table 6, the results indicate that at a -0.0757 of significance, there is no sufficient evidence that there is a significant relationship between the Pharmacology semestral grade and knowledge, the Pharmacology semestral grade and skills, the Pharmacology semestral grade and

attitude, and the Pharmacology semestral grade and overall knowledge, skills, and attitude. In addition, it clearly shows that the self-perceived competence of the respondents in pharmacology can be significantly seen in their final point grade. It reflects how well the respondents perform in their Pharmacology class and having good grades signal the ability to learn.

The findings were further supported by a study conducted at the College of Education at the Polytechnic University of the Philippines. The study's finding implies that there is no significant relationship between the students' GWA and their performance in academic year.Hence, according to the result, there is no significant relationship on the self-perceived competence of graduating nursing students in Pharmacology under E-learning when grouped according to Pharmacology semestral grade in terms of knowledge, skills, and attitude.

Table 7. The significant relationship on the Self-perceived Competence of Graduating Nursing Students in Pharmacology E-learning according to Place of Origin and Pharmacology Semestral Grade

Overall	r Value	p Value	Decision	Interpretation
Overall Rural vs Urban and KSA	0.1977	0.1625	Retain Ho	**No Significant**
Overall Semestral Grade and KSA	-0.0757	0.000	Retain Ho	**No Significant**

Under the first row of Table 7., presents the Overall Rural vs Urban and KSA, it shows that there is no significant relationship between the self-perceived competence and place of origin of graduating nursing students in Pharmacology E-learning as it has r Value of 0.1977 and p Value of 0.1625 which is interpreted as Negligible Correlation in statistics.

The Overall Semestral Grade and Self-perceived Competence in terms of Knowledge, Skills, and Attitude were presented in the second row of Table 7, indicating that there is no significant relationship between the self-perceived competence and semestral grade as it has a r Value of –0.0757 and p Value of 0.000 which is interpreted as Negligible Correlation in statistics. These results implicate that the place of origin and semestral grade have no relations and effects on graduating nursing students' self-perceived competence in Pharmacology E-learning setting.

4.0 Conclusion

The study revealed that the majority of the respondents, consisting of forty-one (41) fourth-year BS Nursing students at Emilio Aguinaldo College - Manila, was twenty-one (21) years old and above, with 73.17% living in urban areas and 26.83% from rural regions. The students performed well in their Pharmacology subject, with most of them received Excellent to Very Satisfactory grade range and no failing grades indicating that the teaching and learning process of the subject was implemented effectively and competently patterned from the mandates of Commission on Higher Education's (CHED) E- learning implementation.

Statistical analysis revealed a significant relationship between the Pharmacology semestral grade and self-perceived competence in terms of knowledge, skills attitude, and overall self-perceived competence. The self-perceived competence of graduating nursing students in Pharmacology under E-learning set-up was significantly determined through Pharmacology semestral grade but not by age and place of origin. The study supported the alternative hypothesis, indicating significant relationship in the self-perceived competence of graduating nursing students in Pharmacology under E-learning based on their Pharmacology semestral grade. Overall, it shows that the self-perceived competence of the graduating nursing students can be determined primarily by objective data, which is their pharmacology semester grade that was checked formally with the consent to correspond the credibility of the data.

5.0 Implication

The findings of this study have significant implications for nursing education and practice. Firstly, the study suggests that E-learning is an effective mode of teaching Pharmacology to nursing students, as evidenced by the student's overall excellent to very satisfactory semestral grades with no failing grades. Nursing schools and educators may consider incorporating E-learning in Pharmacology courses to enhance student learning and competence. Secondly, the study highlights the importance of Pharmacology semestral grades as a critical factor in determining the self-perceived competence of graduating nursing students in Pharmacology. Nursing schools and educators may need to emphasize monitoring and improving their students' Pharmacology semestral grades to ensure they are well-prepared for their clinical practice. Thirdly, the study suggests that age and place of origin do not significantly affect the self-perceived competence of graduating nursing students in Pharmacology under E-learning set-up. Overall, the implications of this study underscore the importance of Pharmacology E-learning, monitoring Pharmacology semestral grades, and designing curricula that meet the needs of a diverse student population in Emilian nursing education.

Consent and Ethical Approval

The researcher undergone ethics review from Davao Doctors College Incorporation. Informed consent was given, and confidentiality of data is strictly applied.

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