

Professional E-Examination for General Nurses: The Perception and Attitude of Undergraduates

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DOI: 10.56201/ijmepr.v9.no3.2025.pg16.25

Abstract

Nursing education in Nigeria is undergoing vital reforms including the introduction of E-Examinations. The study assessed the perception and attitude of nursing undergraduates in Edo State University, Uzairue, Edo State towards the professional e-examination for General Nurses in Nigeria. A descriptive survey of 78 students who had sat for the professional examination. The instrument for data collection was the researchers-developed Questionnaire. The reliability was established through the test-retest method using Cronbach's alpha which yielded co-efficient of 0.76. Data analysis was done using SPSS version 27 and reported in the form of frequency, percentages, mean, rank and standard deviation. The surveyed undergraduates had positive perception ($\bar{x}=3.41$) and attitude ($\bar{x}=3.61$) towards the professional e-examination. However, findings of the study captured fear, anxiety and technical issues as factors affecting the nursing undergraduates' attitude. Also, perception was not significantly related to the attitude of the nursing undergraduates. It was recommended that "The Council" should consider instant release of scores to students to aid students' self-evaluation.

Keywords: perception, attitude, e-examination, undergraduates, general nurses, nursing profession

Introduction

An interesting form of Information and Communication Technology (ICT) employed in learning assessment is the E-examination which is also known as Computer-Based Examination (CBE) and Computer-Based Test (Akhlaghi, et al, 2018). The integration of technology into educational assessment has led to a significant shift from traditional paper-based tests to E-examination in nursing education. This transition aims to enhance the efficiency, accuracy, and security of examinations, aligning with global trends in educational methodologies. In Nigeria, Universities, Polytechnics, Monotechnics, and Colleges of Education have adopted e-exam for various assessments, reflecting a commitment to modernizing evaluation processes in line with international standards (Ekpo, 2023). E-exam in nursing offers several advantages over traditional paper-based methods. Administratively, the time and resources required for exam preparation, distribution, and grading are reduced. Automated scoring eliminates human errors, ensuring consistent and objective evaluation of candidates' performance (Shobayo et al. (2021).

The Nursing and Midwifery Council of Nigeria (NMCN) adopted e-examinations for all professional examinations in 2022. The adoption was approved during the 58th General Meeting of the Board held on June 23-24, 2022. The e-examination was first implemented in September 2022 for professional midwifery examination (Ekpo, 2023). Thereafter, NMCN announced full implementation of e-exam for all professional examinations conducted for both

nursing and midwifery programs in October 2022. The e-exam aim to promote and maintain excellence in nursing education and practice in Nigeria, in line with global best practices. The e-exam initially contained theory and objective questions, similar to the previous pen-and-paper pattern. However, from November 2022, the examinations contained only objective questions. The e-examinations usually take place at dedicated CBT centers across the six geopolitical zones of Nigeria. The Council has identified standard CBT centers across the 36 states and the Federal Capital Territory.

Despite the advantages of e-exam, its implementation in professional examinations for nurses presents several challenges. One significant concern is the digital divide, where disparities in access to technology and varying levels of digital literacy among students can impact performance. Students from underprivileged backgrounds may lack adequate exposure to computers, leading to increased anxiety and potential under-performance in CBT settings (Shobayo et al. (2021). Furthermore, technical issues, such as software malfunctions, hardware failures, and internet connectivity problems, pose additional challenges. These issues can disrupt the examination process, causing stress among candidates and potentially affecting their performance (Kanikwu & Mormah, 2022). In the opinion of Ekpo (2023), ensuring the availability of functional equipment and reliable technical support is crucial to mitigate these issues.

Studies assessing nursing students' perceptions of CBT have yielded mixed results. A study conducted by Israel and Ugwu, at the University of Nigeria, Enugu Campus, titled perceived challenges and improvement strategies for computer-based test in the Nursing and Midwifery Council of Nigeria final examination in a university in south eastern Nigeria revealed that a majority of students (74.3%) held a positive perception of CBT, preferring it over traditional pen-and-paper examinations. However, challenges such as difficulty in answering lengthy, narrative-style questions within limited time frames were reported. Students suggested improvements, including the provision of a conducive CBT environment and the maintenance of functional computer systems prior to examinations (Shobayo et al., 2021).

Mormah and Kanikwu (2024); Abba and Abubakar (2020) noted that one factor that has been of interest to educators since the integration of e-exam in the school system is the individual's attitude which is an important variable in the learning process and acceptance of CBE. Attitude is an inner psychic state influencing behaviour (Accreditation Council on Optometric Education, 2019). Consequently, attitudes are formed in the process of experience and their change is possible due to internal and external factors. Agah et al (2019), opined that e-exam is a technology driven approach towards evaluating students. However, there is little published data evaluating the perception and attitude of students towards e-exam particularly in the Nigeria university setting. This study therefore aims to determine the perception and attitude of undergraduates towards professional e-examination in Edo State University, Uzairue.

Purpose of the Present Study

Specifically, this study aims to ascertain the perception, attitude and factors affecting the attitude of nursing undergraduates towards professional e-examination in Edo State University, Uzairue. One null hypothesis (H_0) was formulated for the study and states that there is no significant relationship between the perception and attitude of nursing undergraduates towards professional e-examination in Edo State University, Uzairue.

Method

Sample

The population for this study consisted of 78 undergraduates of the Department of Nursing Science at Edo State University, Uzairue. No sampling was done because the population size was considered small.

Instrument

The data collection was done using a Questionnaire on perception and attitude of nursing undergraduates towards professional e-examination (QPANUPE). The questionnaire consisted of twenty four (24) items in four (4) sections. Section A contains four (4) items which elicited information on socio-demographic characteristics of respondents. Section B contains nine (9) items which elicited information on perception of nursing undergraduates towards professional e-examination. Section C contains seven (7) items which elicited information on attitude of nursing undergraduates towards professional e-examination. Section D contains four (4) items and was used to elicit information on factors affecting the attitude of nursing undergraduates towards professional e-examination. Sections B and C were designed into five-point rating scale namely: Strongly Agree (SA) = 5points, Agree (A) = 4points, undecided= 3points, Disagree (D) = 2points and, Strongly Disagree (SD) = 1point. Two (2) experts, lecturers in Nursing Science from Edo State University, Uzairue and Measurement and Evaluation unit from Nnamdi Azikiwe University, Awka validated the instrument. The questionnaire was subjected to reliability test using the test-retest method to measure the reliability and internal consistency from 10 nursing undergraduates in another State-owned university which was not used for the actual study. The Cronbach alpha yielded a coefficient of 0.76.

Design

The survey adopted a descriptive research design.

Method of Data Collection

Ethical approval was obtained for the study from health research ethics committee of Edo State University, uzairue. Informed consent was obtained from the nursing undergraduates. Undergraduates in final year who had undertaken at least on qualifying examination of the NMCN and willing to participate in the data collection aspect of the research were included in the study. The researchers visited the students in their classroom to administer the questionnaire. The completed copies of the questionnaire were retrieved on the spot, and there was 100% return rate. Data collection lasted a period of one (1) week. The anonymity, privacy and the confidentiality of participants were maintained during and after data collection.

Method of Data Analysis

Data collected from QPANUPE were analyzed using frequencies, percentages, mean, rank and standard deviation. The research questions were answered using mean. The criterion mean of 3 and above was considered as positive perception/attitude and an aggregate mean lower than 3 indicated negative perception/attitude. Chi-Square test (to determine relationship) was adopted in testing null hypothesis at 0.05 level of significance. Statistical Package for Social Sciences (SPSS) software Version 27 was used in the data analysis. All the results were presented in tables.

Results

Socio-Demographic Characteristics of Respondents

Socio-Demographic Characteristics of Respondents are presented in Table 1. The findings reveal that majority 63(80.8%) of the respondents are females. Most of the respondents 41(52.6%) were between 18-20 years of age. A greater number 77(98.8percent) of the respondents are single. A total of 55(70.5percent) practice Christianity.

Perception of nursing undergraduates towards professional e-examination for general nurses

Table 2 shows the perception of nursing undergraduates towards professional e-examination for general nurses. Findings revealed that by rank professional e-examination makes it quicker to process students' scores ($\bar{x}=4.44$), professional e-examination is in line with best practice ($\bar{x}=4.36$), using question pool/bank makes the exam reliable ($\bar{x}=4.28$), reduces the need for so many invigilator ($\bar{x}=4.24$), aids management of examination malpractice during the examination ($\bar{x}=3.74$) and, questions are more legible using computers ($\bar{x}=3.14$). The overall average mean score of 3.41 indicated that the nursing undergraduates had positive perception towards professional e-examination for general nurses.

Attitude of nursing undergraduates towards professional e-examination for general nurses

Table 3 shows the perception of nursing undergraduates towards professional e-examination for general nurses. Findings revealed that professional e-examination plays an important role in professional assessment ($\bar{x}=3.40$), nursing undergraduates prefer professional e-examination to paper and pen examination ($\bar{x}=3.40$), the use of professional e-examination is easy ($\bar{x}=4.79$), transiting from pen and paper to electronic professional examination is a commendable development ($\bar{x}=3.77$), Professional e-examination requires more mental effort ($\bar{x}=3.37$) and, professional e-examination is compatible with my school's teaching method ($\bar{x}=4.47$). The overall average mean score of 3.61 indicated that the nursing undergraduates had positive attitude towards professional e-examination for general nurses.

Factors affecting the attitude of nursing undergraduates towards professional e-examination

Table 4 presents findings on the **factors** affecting the attitude of nursing undergraduates towards professional e-examination for general nurses. Findings showed the factors to include fear (79.5%), anxiety (76.9%), ease of navigation (100%) and, technical issues (83.3%).

Hypothesis Testing

Table 5 shows the hypothesis testing result on relationship between the perception and attitude of nursing undergraduates towards professional e-examination for general nurses in Edo State University, Uzairue. Perception was not significantly related to the attitude of nursing undergraduates towards professional e-examination ($X^2 = 27.87$, p-value=0.0000133). This result indicated that the null hypothesis was rejected.

Discussion

This study provides new data on perception and attitude of nursing undergraduates towards professional e-examination for general nurses in Edo State University, Uzairue. Findings showed that nursing undergraduates had positive perception towards professional e-examination for general nurses. The nursing undergraduates agreed that using question pool/bank makes the exam reliable. The study agrees with the findings of Otitoju et al (2024) in Southwestern Nigeria and Olafare et al (2017) which revealed that ease of use, credibility

and perceived usefulness contributed to students positive perception of CBT in Nigerian universities. The study also aligns with the results of Oyetola et al (2022) which reported that students in LAUTECH- Nigeria positively rated CBT for tests and examination but complained about the situation of the CBT centres. The study by Okoye et al (2023) in Anambra State- Nigeria which showed that CBT is useful and ease to use also corroborates results of this study.

Findings of this study also revealed that nursing undergraduates agreed that professional e-examination makes it quicker to process students scores and is in line with best practice. According Ogar et al (2020) the prompt release of examination result is attributed to CBT. The other results of this study regarding e-exam reducing the need for so many invigilators and aiding management of examination malpractice could not be compared as there was no study known to the authors which assessed same, suggesting the need for further research on perception of e-exam.

The findings of this study indicate that majority of nursing undergraduates had positive attitude towards professional e-examination for general nurses. The nursing undergraduates said professional e-examination plays an important role in their professional assessment and is compatible with their university's teaching method. This finding supports the results of Abdulkadir (2021), who reported that most students of Jigawa state college of education had positive attitude towards computer-based test, emphasizing ease in reading from screen and importance to their career. Similarly, this study aligns with the Abdelrahim (2016) who found that majority of the students selected from the chemistry department of KAU-Saudi Arabia Jeddah had positive attitude towards CBT. The chemistry students noted that they were competent with the use computer in exams due to their prior experience.

The nursing undergraduates also agreed that transiting from pen and paper to electronic professional examination is a commendable development. In the opinion of Khoshshima and Toroujeni (2017), innovation and efficiency in students assessment have increased because of the integration of computers, which makes effective the standardization of examination. The nursing undergraduates concurred to preferring professional e-examination to paper and pen examination. In a study by Okocha (2022) the respondents preferred CBT to paper based test but were not willing to adopt the technique in all courses.

The findings of this study captured fear, anxiety and technical issues as factors affecting the nursing undergraduates' attitude towards professional e-examination. A study by Abdulkadir (2021) identified poor internet as a crucial factor affecting CBT examinations. A related study by Umar (2021) found out that computer anxiety positively predicted and determined the respondents attitude towards adopting CBT as a means of assessment in Ankpá-Nigeria. The findings of this study also captured ease in navigating the professional e-exam software as a factor affecting the nursing undergraduates' attitude. This finding could not be compared.

The present study also revealed that perception was not significantly related to the attitude of nursing undergraduates towards professional e-examination. A similar study by Otitoju et al (2024) found that there was significant difference in the perception and attitude of pre-tertiary institution students towards the use of CBT in Southwestern Nigeria.

Implications for Nursing Education

The present study revealed that nursing undergraduates had positive perception and attitude towards professional e-examination for general nurses. In the opinion of the authors, this finding is possibly related to the fact that the students under study are schooling in a peculiar institution which adopts sophisticated technology such as the Learning Management System (LMS) in the day to day teaching and continuous assessment of the students. For this reason, students are encouraged to own and use smart phones and computer devices to enable them utilize the LMS. Although this has contributed positively to the nursing undergraduate's

perception and attitude, the position might be different with their counterparts in other conventional Nigerian universities which lack such exposure. Hence, further studies on comparison of perception and attitude across institutions is indispensable.

Conclusion

In conclusion, the nursing undergraduates reported positive perception and attitude towards the professional e-examination for general nurses. The researchers recommend the development of online tutorial platforms by educators to create interactive online tutorials that will enhance nursing students performance in the professional e-examinations. Also, the development of mobile apps by technocrats for nursing students to access study materials, practice questions and electronic examination simulations is recommended. In addition, heads of training institutions should ensure that students in the examination class are subjected to electronic mock tests on all components of the examination, to enhance acquaintance as well as reduce fear and anxiety. This will be helpful in making nursing students become comfortable with e-exam situations. Regular system maintenance, candidates technical briefing and trial run by the Nursing and midwifery Council of Nigeria's centre managers prior to the exams should also be encouraged. Lastly, the Nursing and midwifery Council of Nigeria should consider the instant release of scores to students. Such timely feedback will better aid the students' self-evaluation.

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Table 1

Socio-Demographic Characteristics of Respondents

S/N	Variables	Attributes	Frequency (N=78)	Percentage
1.	Gender	Male	15	17.2
		Female	63	80.8
2.	Age (in years)	15-17	5	6.4
		18-20	41	52.6
		21-23	20	25.6
		24-26	11	14.1
		27 and above	1	1.3
3.	Marital status	Single	77	98.7
		Married	1	1.3
4.	Religion	Christianity	55	70.5
		Islam	23	29.5

Table 2

Perception of nursing undergraduates towards professional e-examination for general nurses

S/N	Variables (N=78)	SA	A	U	D	SD	mean	Rank	Decision
1.	Professional e-examination is in line with best practice	40	33	0	3	2	4.36*	2	Positive
2.	makes it quicker to process students scores	55	10	5	8	0	4.44*	1	Positive
3.	Uses question pool/bank making the exam reliable	46	20	3	6	3	4.28*	3	Positive
4.	Aids management of examination malpractice during the examination	36	10	15	10	7	3.74*	5	Positive
5.	Questions could be hacked thereby questioning data security	10	19	9	12	28	2.63	8	Negative
6.	Questions are more legible using computers	20	15	10	22	11	3.14*	6	Positive
7.	Allows for immediate feedback	50	15	0	10	3	2.67	7	Negative
8.	Support staff can not be compromised	2	3	3	5	65	1.23	9	Negative
9.	Reduces the need for so many invigilators	43	23	3	6	3	4.24*	4	Positive
	Overall average						3.41		Positive

Table 3

Attitude of nursing undergraduates towards professional e-examination for general nurses

S/N	Variables (N=78)	SA	A	U	D	SD	Mean	SD	Decision
1.	Professional e-examination plays an important role in professional assessment	23	24	4	15	12	3.40*	0.37	Positive
2.	I prefer professional e-examination to paper and pen examination	30	12	8	15	13	3.40*	0.37	Positive
3.	The use of professional e-examination is easy	66	10	0	2	0	4.79*	0.33	Positive
4.	Transiting from pen and paper to electronic professional examination is a commendable development	35	18	6	10	9	3.77*	0.41	Positive
5.	Professional e-examination requires more mental effort	28	13	8	18	11	3.37*	0.37	Positive
6.	Professional e-examination is compatible with my school's teaching method	45	27	4	2	0	4.47*	0.33	Positive
7.	I am not comfortable with professional e-examination at all	3	4	6	45	20	2.04	0.43	Negative
	Overall average						3.61	0.37	Positive

Table 4

Factors affecting the attitude of nursing undergraduates towards professional e-examination for general nurses

S/N	Variable	Frequency (N=78)	Percentage
1.	Fear is common during the professional e-examination	62	79.5
2.	Anxiety is common during the professional e-examination	60	76.9
3.	The software for the professional e-examination is easy to navigate	78	100
4.	Technical issues are common during the professional e-examination	65	83.3

Table 5

Relationship between the perception and attitude of nursing undergraduate

	Positive perception	Neutral perception	Negative perception	X^2	Df	P-value
Positive attitude	35	25	10	27.87	4	0.0000133
Neutral attitude	15	10	5			
Negative attitude	5	8	20			