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Research Article

EXPLORING THE VALUE AND CHALLENGES OF COMPUTER-BASED TESTING FOR NURSING LICENSURE IN AKWA IBOM, NIGERIA

[1]Prof. Adaobi Ngozi Chukwu and [2]Dr. Ifeoma Nkechi Akinwale

[1,2]Centre for Public Health and Toxicological Research, University of Port Harcourt, Port Harcourt, Nigeria

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Abstract:

This study aimed to evaluate the perceptions of nursing students in Akwa Ibom, Nigeria, regarding the use of computer-based testing (CBT) for licensure exams. The research adopted a descriptive design and involved 218 final-year nursing students (139 nursing students and 79 midwifery students) who had previously participated in CBT. Data collection was carried out through a self-administered questionnaire designed by the researcher. The gathered data were analyzed using SPSS version 25, employing descriptive statistics, including means and standard deviation, and inferential statistics, specifically the t-test, to test the hypotheses. The results indicated that both nursing and midwifery students held positive perceptions of CBT's usefulness for licensure exams, with mean scores of 3.45 for nursing students and 3.41 for midwifery students. Statistical analysis revealed no significant differences in the perceptions of CBT between the two groups, as p-values exceeded the 0.05 significance level. The study concluded that nursing students in Akwa Ibom generally viewed the adoption of CBT for licensure exams positively. However, the study also highlighted some challenges, such as the need for sufficient training, functional computers, and addressing power outages during CBT. The findings suggest that these barriers should be mitigated to enhance the successful implementation of CBT in future licensure exams.

Keywords: Computer-based testing, Nursing students, Licensure exams, Perceptions, Nigeria

Introduction

In recent years, the educational landscape has been significantly transformed by the integration of Information and Communication Technology (ICT), notably through the adoption of computer-based testing (CBT) as an alternative to traditional paper-based assessment methods. Computer-based testing is defined by Mercer and Metti (2021) as an assessment method where exams are administered online through a computer or internet-based platform, eliminating the need for paper and manual grading systems. This approach allows for a more streamlined and efficient means of evaluating students' knowledge and skills, facilitating broader access, real-time feedback, and enhanced security. Computer-based testing has been successfully implemented in various educational systems

worldwide, and its impact has been particularly significant in the context of licensing and certification exams, where it promises to enhance fairness, reduce cheating, and streamline the administration process.

The widespread adoption of computer-based testing has been driven by the increasing reliance on digital technologies in education, with many institutions, particularly in developed countries, embracing the benefits of digital assessment platforms. According to Obioma et al. (2013), computer-based tests have become the preferred method of assessment in numerous academic subjects due to their ability to deliver reliable and consistent results, as well as their capacity to handle large volumes of data efficiently. In addition, the use of digital assessments provides significant advantages, including flexible scheduling, immediate scoring, and the prevention of human error in grading. Furthermore, CBT systems typically utilize a range of question formats, including multiple-choice questions (MCQs), which allow for a more comprehensive evaluation of students' understanding of the subject matter.

Despite these advantages, the transition to computer-based testing is not without its challenges. The integration of CBT into educational practices requires adequate infrastructure, including access to reliable internet, functioning computers, and proper training for both students and educators. The perceptions of students regarding the adoption of CBT are also a crucial consideration in the successful implementation of this technology. Factors such as prior exposure to technology, personal preferences, and environmental influences play a significant role in shaping students' attitudes toward computer-based exams. Wolfe (2019) highlights those perceptions, shaped by individual experiences and cognitive processes, influence how students approach and engage with CBT, impacting their overall performance and satisfaction.

In the context of nursing education, the adoption of computer-based testing has been somewhat slower, despite the widespread implementation of CBT in other academic fields. In countries like the United States, nursing students are required to pass the National Council Licensure Examination for Registered Nurses (NCLEX-RN), a computer-adaptive test that is administered online. The NCLEX-RN exam has been used for several decades and is a crucial step for nursing graduates to enter the workforce. The adoption of computer-based testing for nursing licensure exams has been seen as a progressive step, offering several benefits such as reducing administrative burdens, improving exam security, and allowing for more flexible testing schedules. However, despite the success of computer-based exams in countries like the United States and Canada, there remains limited research on the application of CBT in nursing and midwifery exams, particularly in developing countries like Nigeria.

In Nigeria, the use of computer-based testing has gained momentum in recent years, particularly within the context of the Unified Tertiary Matriculation Examination (UTME), administered by the Joint Admissions and

Matriculation Board (JAMB). Since 2015, JAMB has transitioned to conducting all its exams through computer-based platforms, aiming to eliminate exam malpractice, which has been a significant challenge in the Nigerian educational system (Vanguard, 2012, cited in Aliyu & Adebayo, 2012). This transition marks a significant shift towards modernizing the Nigerian educational assessment system, and many Nigerian universities and polytechnics have followed suit by adopting computer-based tests for various exams. For example, the University of Nigeria, Nsukka, instituted CBT for all exams involving more than 250 students starting in 2018, significantly reducing the issues of lost scripts and delayed results (Ozumba, 2018).

Despite these advancements in the Nigerian educational system, the application of computer-based testing in nursing and midwifery licensure exams has been relatively underexplored. In June 2022, the Nigerian Nursing and Midwifery Council (NMCN) made a landmark decision to digitalize the professional examinations for nurses and midwives, aiming to align with global best practices. This move represents a significant shift in the way nursing licensure exams are conducted in Nigeria and presents an opportunity to explore the perceptions, challenges, and facilitators surrounding the adoption of computer-based tests in the nursing field.

While computer-based testing has been widely accepted in other fields, the application of CBT in nursing and midwifery examinations in Nigeria remains a relatively novel concept. Research into this area is limited, and there is a significant gap in understanding the perceptions of nursing students toward the use of CBT for licensure exams. In particular, it is important to investigate how nursing students view the value of CBT in terms of its potential benefits, challenges, and its impact on their learning and performance. The attitudes and perceptions of nursing students are vital in shaping the future success of CBT implementation, as students are the primary users of this system.

One of the key aspects of implementing computer-based tests in nursing and midwifery licensure exams is understanding the barriers and facilitators that influence students' experiences with this mode of assessment. Barriers to the effective implementation of CBT may include limited access to computers and the internet, inadequate infrastructure, lack of training, and concerns about the security and reliability of the system. Conversely, facilitators may include factors such as prior exposure to computer-based learning environments, the availability of technical support, and positive attitudes toward technology. Understanding these factors is crucial for the successful implementation of CBT in nursing licensure exams, as it will allow stakeholders to address potential challenges and create an environment conducive to effective learning and assessment.

This study seeks to address these gaps by examining the perceptions of nursing students in Akwa Ibom, Nigeria, regarding the use of computer-based testing for licensure exams. Through this research, the aim is to identify the factors that influence students' views on the value of CBT, including perceived benefits, challenges, and the role

of technology in enhancing the exam experience. The findings of this study will provide valuable insights into the perceptions of nursing students on computer-based testing, which can inform the development of policies and strategies to improve the implementation of CBT in nursing and midwifery licensure exams. By identifying the key barriers and facilitators, this study will contribute to the ongoing discourse on the integration of ICT in education and provide recommendations for improving the use of computer-based testing in the Nigerian context. Moreover, the insights gained from this research will serve as a reference for future studies on the adoption of computer-based tests in nursing education and licensure exams in other parts of Africa and beyond. The results of this study could have broader implications for the adoption of digital assessment methods in the healthcare education sector, helping to shape the future of nursing education in Nigeria and other developing countries where the use of technology in education is still evolving. By examining the experiences and perceptions of nursing students, this study will play a key role in guiding the effective implementation of computer-based testing and supporting the digitalization of nursing education and licensing processes in Nigeria.

Aim and objectives of the study

The study aimed to assess Nursing students' perception of value of Computer-Based Test for licensure Examination in Akwa -Ibom. Objectives to:

1. Assess the Nursing students' perception of value of computer-based test adoption for licensure examination in Akwa- Ibom.

Hypotheses

1. There is no significant difference between student nurses and student midwives' perception of values of computer-based test for licensure examination in Akwa Ibom.

METHODOLOGY

For the study, the researcher used a descriptive design. A descriptive study involves the methodical gathering and presenting of data in order to unearth new information and provide a comprehensive picture of how Akwa-Ibom nursing students perceive the benefits, obstacles, and usefulness of computer-based exams for licensure. The target population for this study consisted of all students enrolled in Akwa Ibom state's nursing and midwifery institutions, as well as midwives. There were 609 students at the time of the study. 218 final-year students who had taken the computer-based licensing exam for their nursing and midwifery professional exams during their study term made up the sample. Data was gathered by having each responder personally complete a questionnaire that they had created themselves. In order to administer the questionnaire to the necessary respondents, the researcher visited the schools to gain authorization from the relevant authorities. Research assistants assisted in distributing the questionnaires to the selected pupils in their individual schools. A total of 218 questionnaires were distributed, collected upon completion, and utilized for data analysis and coding. An independently created questionnaire served as the research tool, gathering data on the value, perceived facilitators, and obstacles

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associated with computer-based assessments for licensing exams. We collected the completed surveys on-site. Compiling, coding, and entering the data into the statistical package for social sciences (SPSS) version 25 allowed for analysis. Categorical variables were created using statistics based on percentages and frequencies. Descriptive statistics like means and standard deviation were used to analyze the study questions. The t-test was utilized to assess the hypotheses. We have presented the data in tables and graphs to ensure clarity.

RESULTS Socio-demographic characteristics

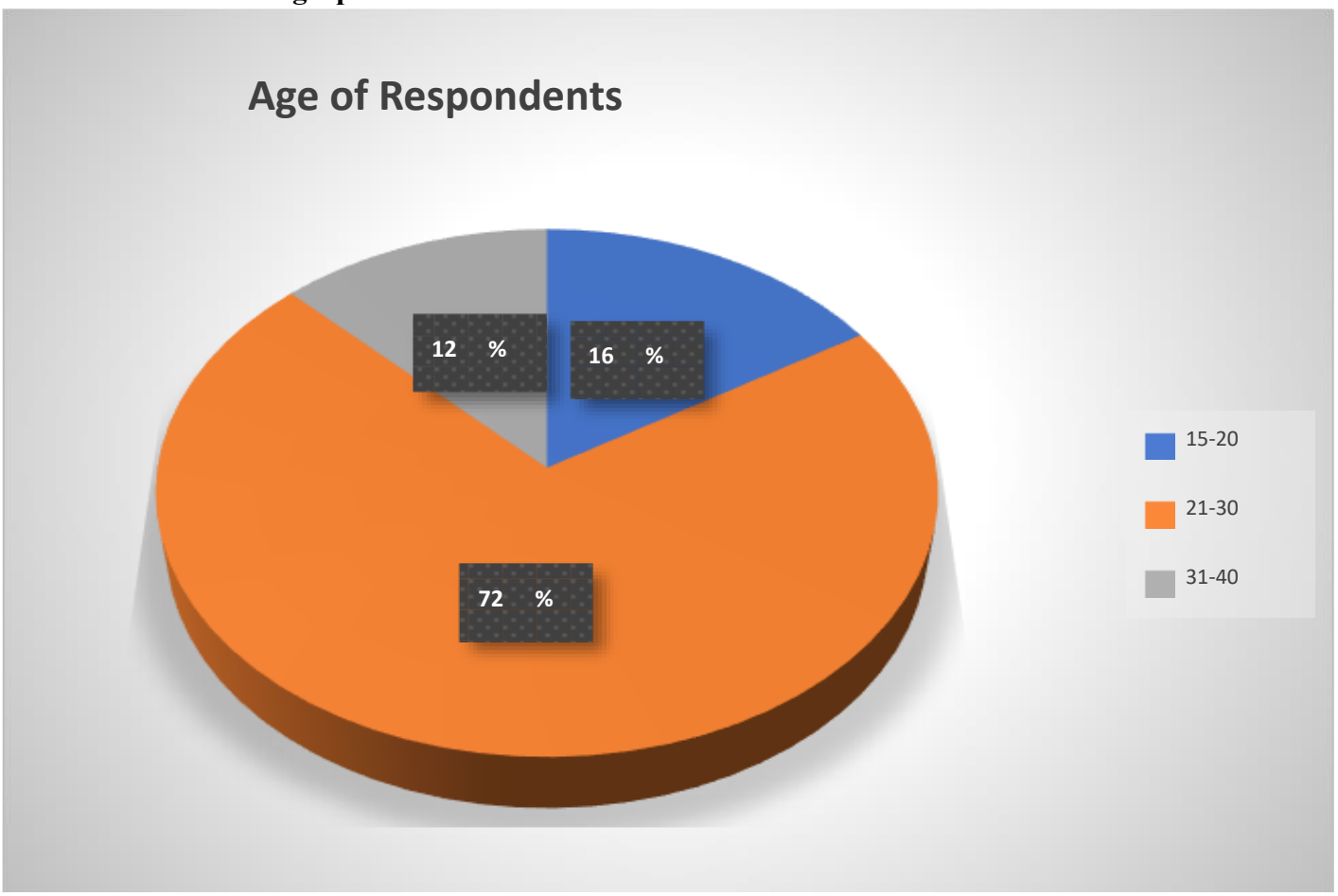

Figure 1: Age range

The descriptive analysis on years in age showed that those within 15-20 years were 35 representing 15.6 %, those on the age range of 21-30 were 156 representing 69.3% while those within the age bracket 31-40 years were 27 representing 12.0%.

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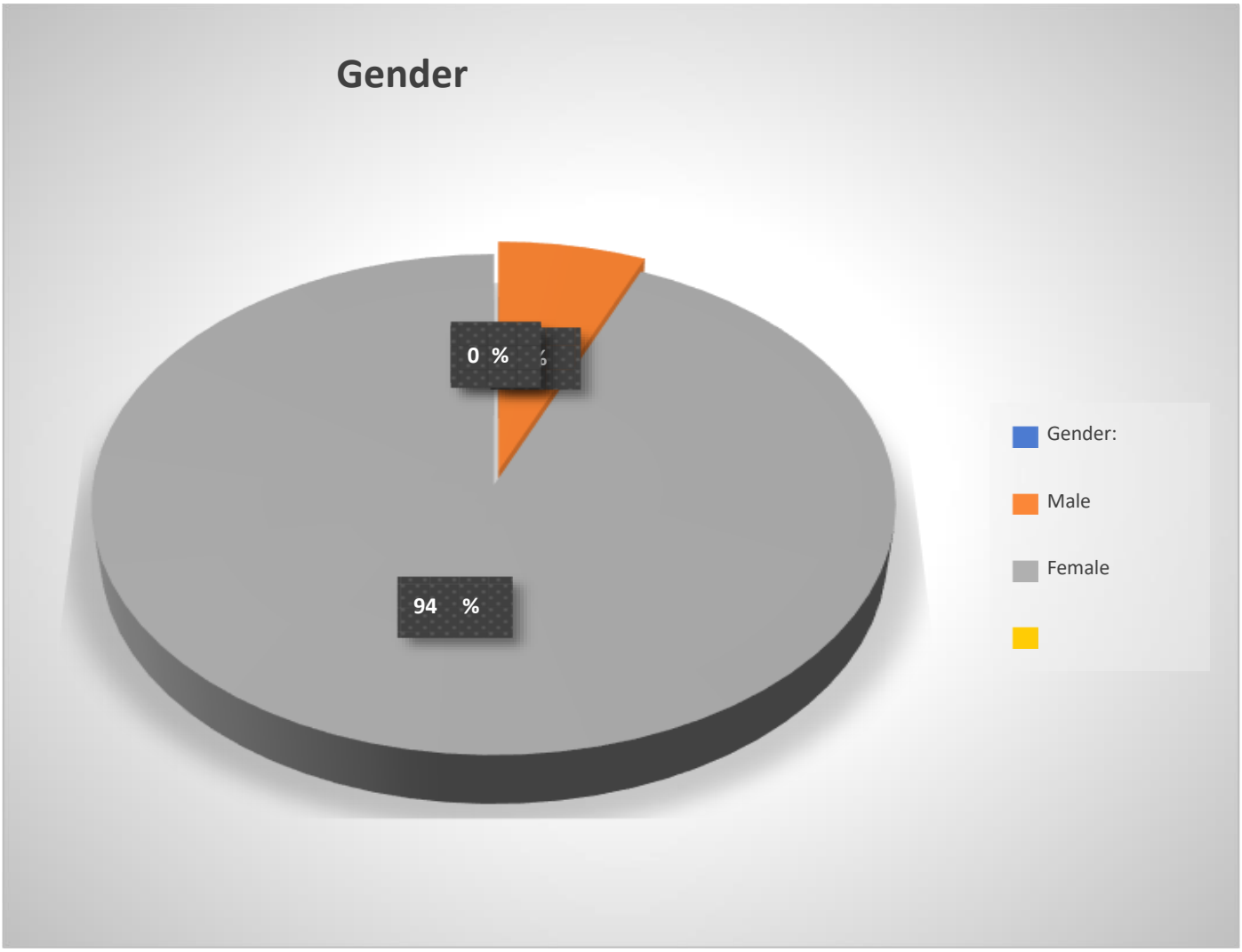

Figure 2: Gender

Result on gender showed that males were 14, representing 6.7% while females were 204 representing 93.3%.

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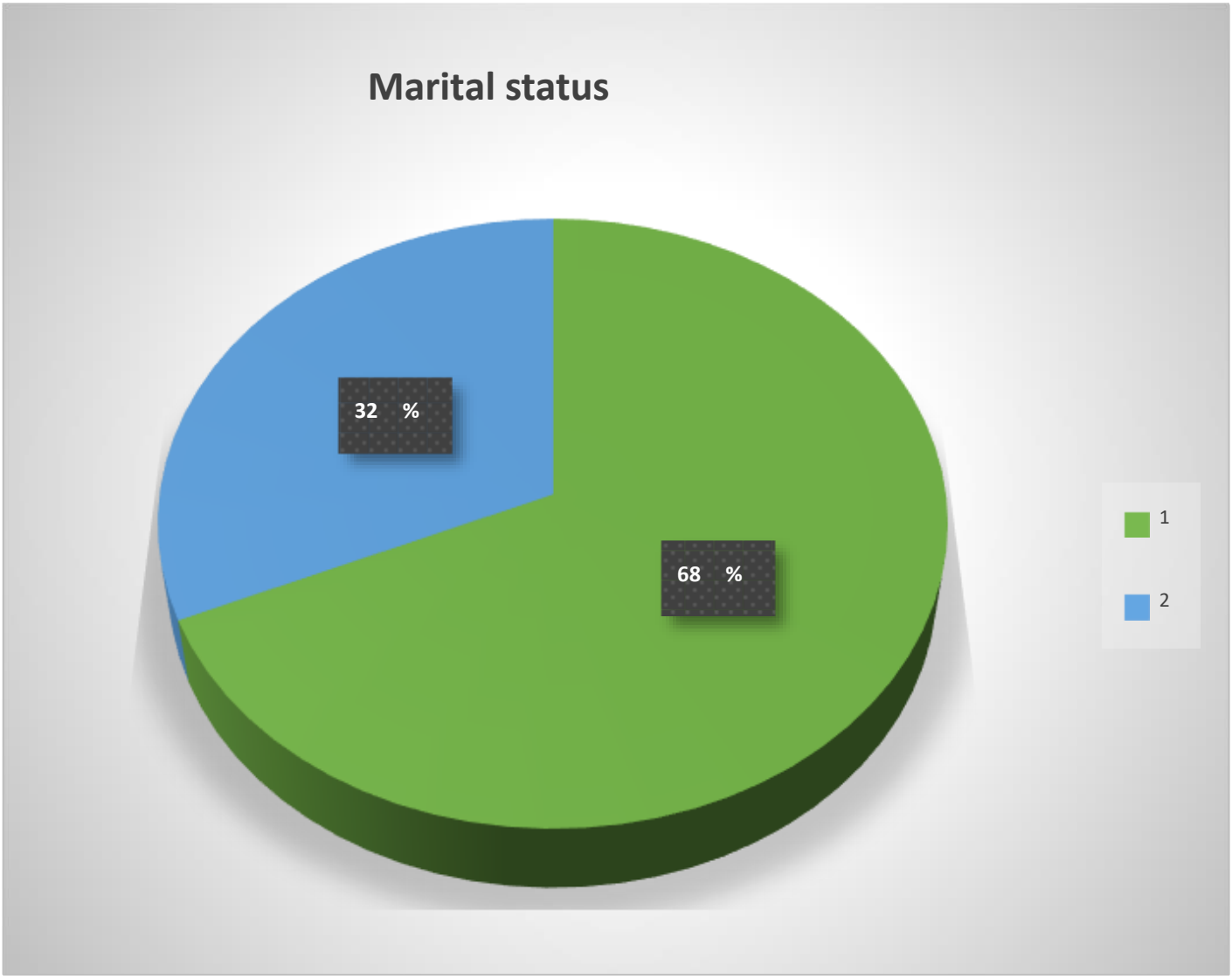

Figure 3: Marital status

On marital status the result showed that singles were 183 representing 84.4%, while married were 35 representing 15.6% none were divorced and widowed.

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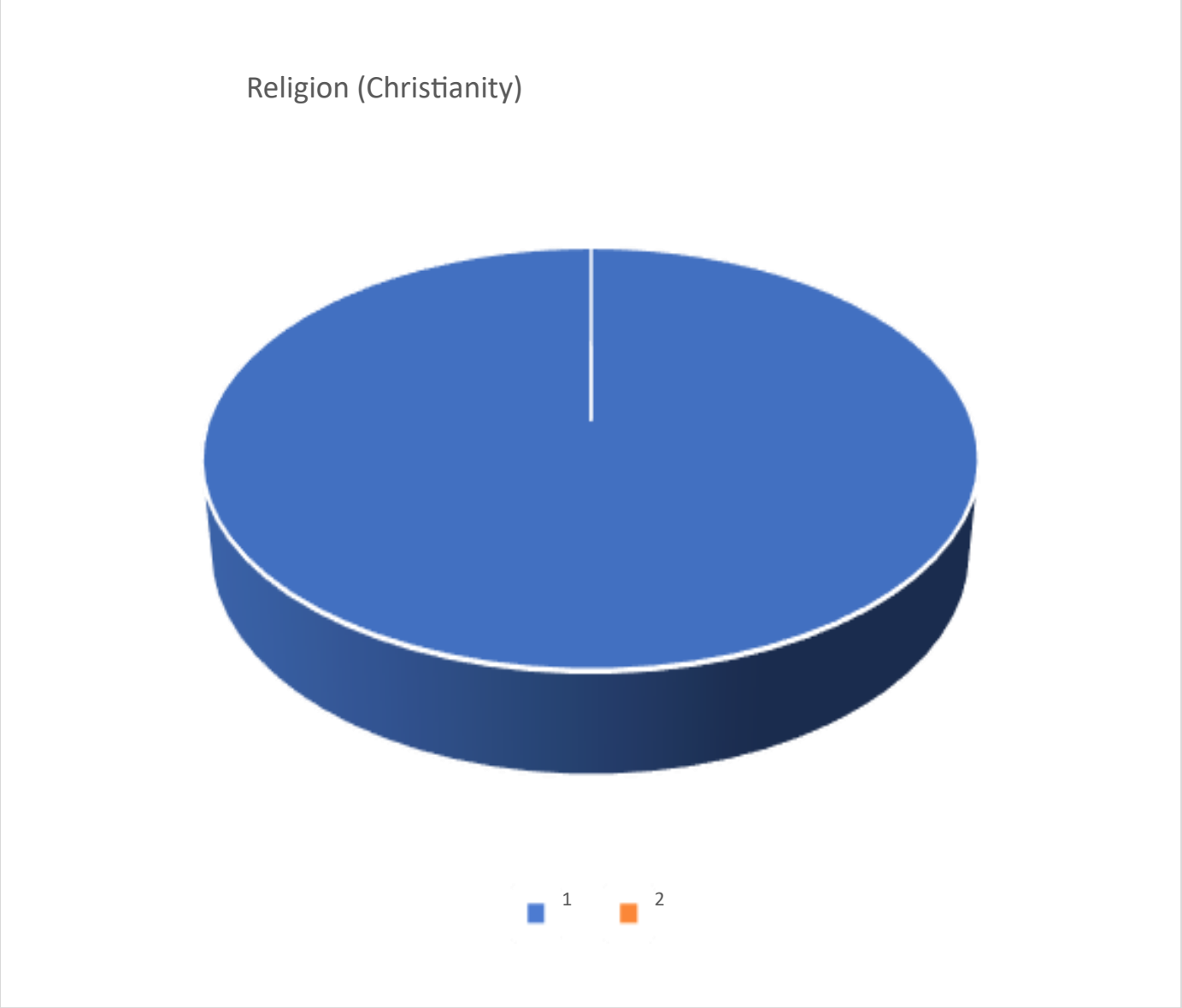

Figure 4: Religion
On religion the whole sample size were all Christian making 100% rate.

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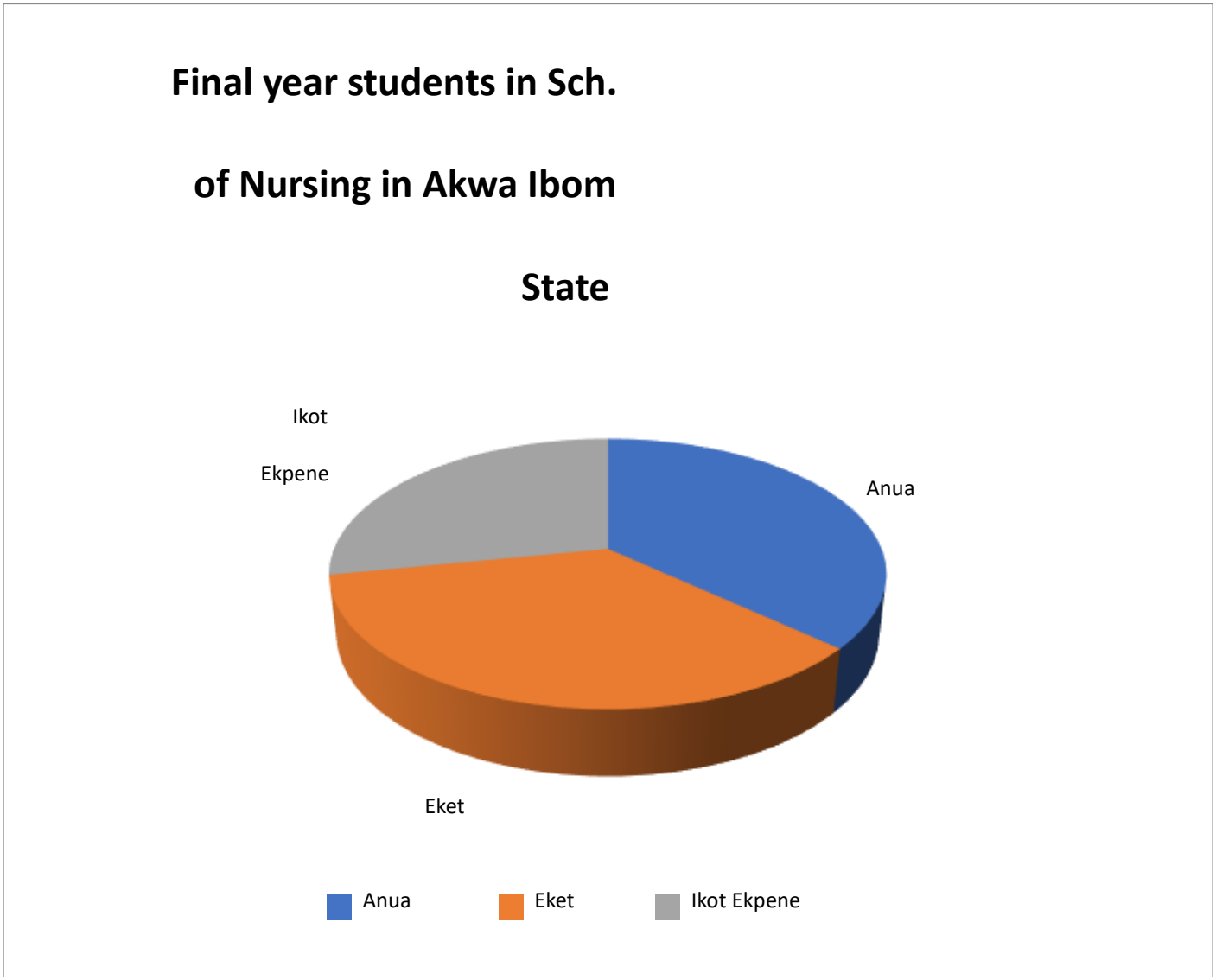

Figure 5: Final year student nurses

For the final year students, Nurses from Anua stood at 51, representing 36.6%, their counterpart at Eket were 49 representing 35.3% while those at Ikot Ekpene were 39 representing 28.1%.

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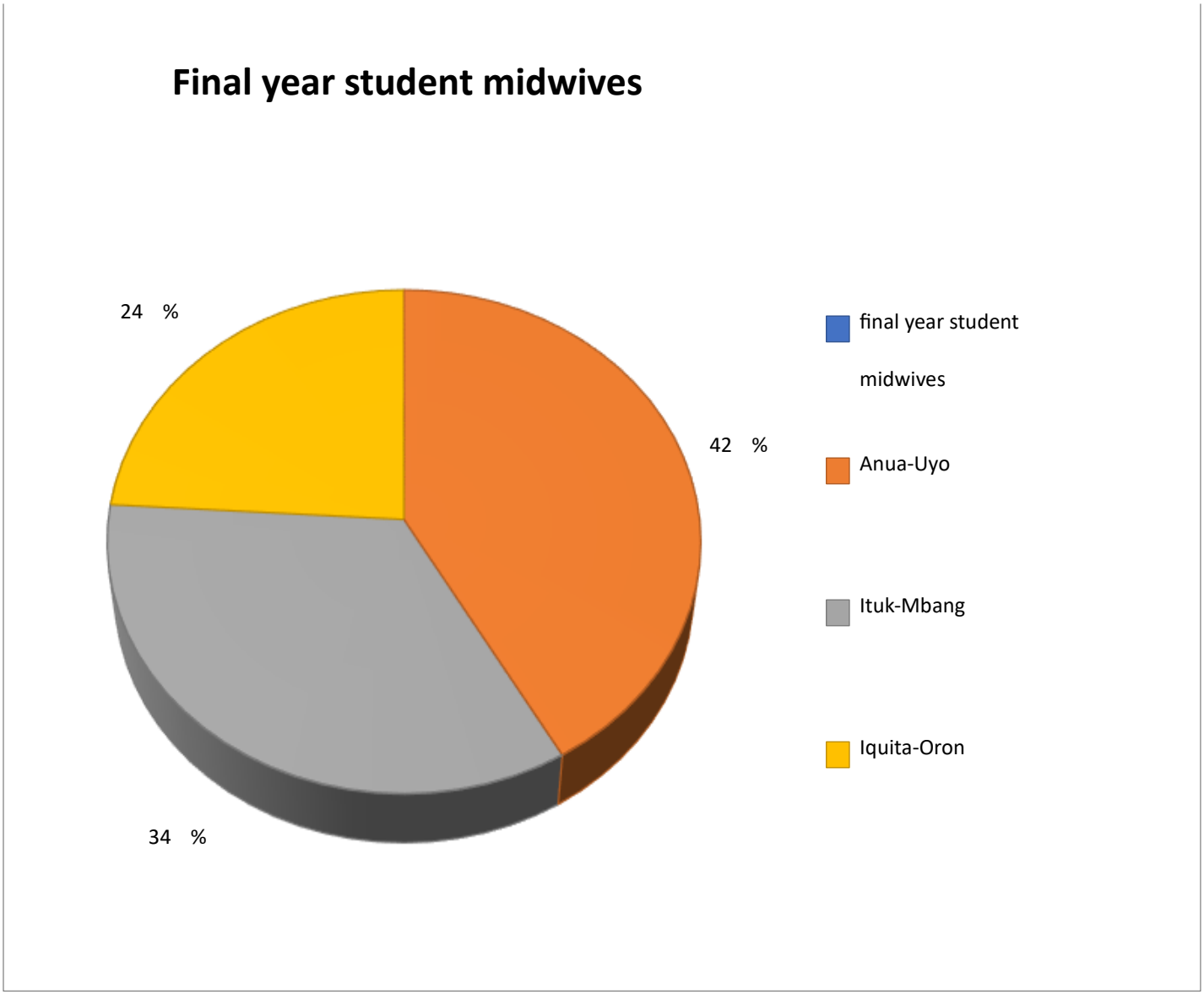

Figure 6: Final year student midwives

For the final year student midwives from Anua-Uyo stood at 33, representing 42%, their counterpart at Ituk-Mbang were 27 representing 34% while those at Oron were 19 representing 24%.

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Table 1: Mean summary of the nursing students' perception of value of computer-based test use for licensure examination in Akwa-Ibom.

S/N	Perceived value of computer based test adoption for licensure examination	X_1 %	SD	X_2 %	SD	Remark
1	Computer-based test is better than Paper based test.	3.46 (63.87%)	.64	3.45 (64.45%)	.63	Positive
2.	Computer-based test is easy to use and credible.	2.46 (51.67%)	.64	2.43 (52.00%)	.65	Positive
3.	Computer-based test is not more convenient than paper-based test.	3.30 (62.90%)	.63	3.27 (63.78%)	.63	Positive
4.	I like the adoption of computer-based test for the NMC examination.	3.45 (63.45%)	.61	3.41 (64.89%)	.61	Positive
5.	Computer-based test reduces missing scripts and stress.	2.41(51.67%)	.61	2.43 (52.78%)	.65	Positive
6.	Computer-based test does not allow for review questions and answers.	2.64 (52.56%)	.70	2.63 (53.87%)	.71	Positive
7.	Computer-based test is credible mode of examination.	2.82 (54.78%)	.81	2.83 (55.76%)	.82	Positive
8.	Computer-based test is not effective in the final examination.	3.49 (64.78%)	.52	3.51 (65.89%)	.50	Positive
9.	I cannot express my points well in computer-based test.	3.57 (65.76%)	.61	3.59 (66.08%)	.61	Positive
10.	Computer-based test gives immediate result than paper-based test.	2.89 (55.67%)	.78	3.16 (60.67%)	.66	Positive
	GRAND TOTAL	**3.04**		**3.07**		Positive

The result in table 1, indicates the mean score on the perceived values in the use of Computer-

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Based Test in licensure examination in Akwa-Ibom. As shown in the table, 'I cannot express my point well in CBT n_1-3.57, n-3.59; CBT is not effective in the final exams n_1-3.49, n_2- 3.51; CBT is better than paper-based test n_1-3.46, n_2- 3.45; I like the adoption of CBT for NMC examination n_1-3.45, n_2-3.41. A grand mean score of 3.04 for students 'nurses (n_1) and 3.07 grand mean for students' midwives (n_2) were recorded for all the items. All these grand means were above the cutoff point of 2.50. This indicates that student Nurses and Midwives had a positive perception of value that Computer-Based Test be adopted in licensure in Akwa-Ibom.

Table 2 t-test analysis of mean responses of student nurses and midwives on value to Computer Based Test

Variables	n	X	SD	df	t-cal	p-value	decision
student nurses	139	**3.04**	1.95				
				126	.040	968	Not significant
student Midwives	79	**3.07**	1.96				

*note: ** p-value not significant@ 0.05level of significance. The null hypothesis is accepted.* The result in Table 2 reveals that the calculated t =. 040.., p =. 968 @ 126 degree of freedom. Therefore, since the p value is greater than 0.05 level of significance, the null hypothesis which states there is no significant difference in the mean responses of students' nurses and students' midwives on the perceived value in the adoption of Computer-Based Test in licensure examinations is accepted. This implies that both student nurses and students' midwives' responses indicate positive perception of the value in the adoption of Computer-Based Test in licensure examinations in Akwa Ibom.

Discussion of Findings

The outcome demonstrated that the nursing student's opinion of the advantages of using computer-based testing for the Akwa-Ibom licensing examination was good. The findings showed that student nurses and midwives thought computer-based tests were a reliable method of assessment, easy to use, and allowed for review of questions and answers. They also thought it was a good idea for Akwa-Ibom to adopt computer-based tests for licensure exams. Some, meanwhile, claimed that CBT was unable to adequately convey some themes. The results corroborate Kundu and Bej's (2021) study, which found that students' perceptions in areas like perceived utility and simplicity of use were superior. These final results corroborate the findings of Bawa and Bashur (2022), who found that students felt positively about computer-based assessments offered in higher education. The research findings demonstrating the inability to adequately summarize points are in line with those of Adeyomi et al. (2021), who discovered that the majority of engineering students preferred the paper-based evaluation method and that they were dissatisfied with the computer-based examination strategy. The findings of this study are

consistent with those of Olbata and Ndun (2021), who found that students believed computer-based testing offered benefits such as exposing them to new situations and teaching them computer skills. The results of this study also support the findings of Rabiu et al. (2020), who argued that computer-based exams are an engaging exam format that simplify test-taking for undergraduate students. The study's findings are consistent with those of Bandele (2019), who found that students had a positive attitude toward the computer-based test for the general studies assessment and that the test's objectives were successfully met. Additionally, in line with Barros's (2018) research, which disclosed students' opinions, computer based exams ought to be preferred over paper-based ones. The results of the study, however, do not align with those of a study by Hooper (2020), which showed that the majority of respondents believed that computer-based tests had drawbacks. According to a study by Christmal & Gross (2019), participants also felt that computer-based exams were necessary since they reduced test taking malpractice, decreased the cost of the exam, and increased students' interest in ICT. It is also crucial for this study to conclude that student nurses and midwives felt it was important to use computer-based tests for Akwa-Ibom license exams.

Conclusion

According to the study's findings, student nurses and midwives felt that using a computer-based test for license exams in Akwa-Ibom was made easier by having a laptop and proper instruction, among other things. Additionally, the student nurses and midwives positively identified the existence of obstacles to the implementation of computer-based tests, including limited ICT infrastructure, computer illiteracy, and inadequate electrical supplies. Additionally, they had a favorable opinion of the benefits of using computer-based tests rather than paper-based ones, however the Akwa-Ibom language makes it difficult to communicate certain issues regarding license exams.

Recommendations

The study's conclusions lead to the following recommendations:

1) It is also necessary to give students instant feedback on their exam results by projecting their scores onto the screen, since this will facilitate their self-evaluation.

2) Teachers should not give up on becoming computer literate in order to give their students the necessary technological help. Additionally, this will improve students' favorable perceptions and help them do better on exams.

3) To acquaint themselves with the CBT process, nursing students ought to experience a mock CBT prior to their licensure exam.

4) For computer-based test licensure examinations, the Nursing and Midwifery Council and school heads must provide a suitable atmosphere and a sufficient number of operational computers.

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