



Medical Students' Perceptions of Anatomy Education: A Comparison of BMAS and CCMAS Cohorts in a Nigerian University.

Dr. Osahenrhumwen Adagbonyin^{1*}, Victor Uwuagbor², Dr. Emmanuel Osemeike Bienonwu³,
Sophia Osayiemenre Woghiren⁴

¹Department of Public Health, College of Health Sciences, Wellspring University, Benin City, Edo State, Nigeria.

^{2,3,4}Department of Anatomy, College of Health Sciences, Igbinedion University, Okada, Edo State, Nigeria.

KEYWORDS:

Perception, Anatomy education, Medical students, Curriculum, BMAS, CCMAS.

Corresponding Author:

Dr. Osahenrhumwen Adagbonyin

DOI: [10.55677/IJMSPR/2026-3050-I901](https://doi.org/10.55677/IJMSPR/2026-3050-I901)

Published: September 03, 2026

License:

This is an open access article under the CC BY 4.0 license:
<https://creativecommons.org/licenses/by/4.0/>

ABSTRACT

Background: Anatomy education is of huge importance crucial in medical training, and evaluating students' perceptions of teaching methods, assessment approaches, and resource availability is crucial for improving the quality of education.

Methodology: This study used a cross-sectional design to gather data from 172 medical students (89 at 200-level -the CCMAS group and 83 at 400-level- the BMAS group) at a Nigerian University. Structured questionnaire were used to collect data on students' perceptions of anatomy education.

Results: The results show students from both the CCMAS participants and the BMAS participants view teaching methods (mean scores 4.11 and 3.83) as well as a combination of assessment methods (mean scores 3.82 and 3.95) as effective. Availability of resource/learning materials got a neutral decision from both groups (mean scores 3.38 and 3.21 respectively). Additionally, both groups ranked overcrowded classes and access to cadaver as their top challenges.

Conclusion: While highlighting the importance of practical classes, cadaver access, and a combination of assessment methods, findings also show that there is no significant difference in the Cohorts perceptions of Anatomy education. The change of Curriculum has not brought about significant change in perceptions yet.

Cite the Article: Adagbonyin, O., Uwuagbor, V., Bienonwu, E.O., Woghiren, S.O. (2026). Medical Students' Perceptions of Anatomy Education: A Comparison of BMAS and CCMAS Cohorts in a Nigerian University. *International Journal of Medical Science and Pharmaceutical Research*, 3(9), 438-445. <https://doi.org/10.55677/IJMSPR/2026-3050-I901>

1 INTRODUCTION

1.1 Background to the Study

Anatomy education is an essential component of medical education because it provides students with a comprehensive understanding of the structure and makeup of the human body (Moore & Dalley, 2006). It is a multifaceted and intricate field that necessitates a thorough comprehension of the connections between various body structures and systems (Netter, 2019). Teaching anatomy has recently faced several challenges despite its importance. Among these are:

Less time spent on dissection: The reduction of dissection hours in several medical schools has sparked concerns about the potential impacts on students' understanding of anatomy (Parker, 2002).

Assessment techniques: In assessing anatomical knowledge, clinically focused questions and problem-solving skills have grown in significance (Smite et al., 2016).

Use of technology: Digital resources such as 3D models and virtual dissection tables have transformed anatomy education (Moxham et al., 2016).

The relevance of teaching anatomy in medical school has been stressed severally by experts. For Example: the renowned anatomist and medical illustrator Netter, emphasized the importance of understanding anatomy in the context of clinical practice (Netter,2019). Also eminent anatomy education researcher, Moxham has highlighted the need for innovative teaching strategies and assessment methods in the field (Moxham et al., 2016). Similarly, Rebecca Drake has stated that it is crucial to integrate anatomy with other courses and use clinically-oriented teaching methods (Drake et al., 2014).

Given the importance of anatomy education and the challenges it faces, the purpose of this study is to find out how medical students of the CCMAS era compares with those of the BMAS era in terms of perceptions about Anatomy education in Igbinedion University Okada. By looking at the perception of the students, this study can help clarify the benefits and drawbacks of the current anatomy curriculum and direct future advancements.

1.2 Statement of the Problem

The importance of Anatomy education to medical students rests squarely on the fact that it provides a comprehensive understanding of the structure and composition of the human body. However, despite its importance, anatomy education has faced several challenges, including a lack of clinical practice integration, a decline in dissection hours, and a variety of evaluation method. These challenges have raised questions about how well anatomy education prepares medical students for clinical practice. In all of this, the perceptions of medical students from both the old BMAS curriculum era and the recently introduced CCMAS curriculum era remain crucial if the intended outcomes will be realized. Here are some specific problem. Many medical students struggle to recall anatomy, which impacts how well they do on examinations just as limited clinical applications could increase students' struggle to comprehend anatomy when it is presented in isolation. Students' practical exposure to anatomical structures has decreased due to dwindling dissection hours and restricted cadaver access.

1.3 Justification for the study.

The need for continuous improvement in the training of medical professionals cannot be over-emphasized. This is where Anatomy education in particular takes centre stage as a crucial course being the mother of medicine. for. The results of the study can guide future modifications to the anatomy curriculum, increasing its efficacy in getting medical students ready for clinical practice.

1.4 Aim of Study

This study aimed to investigate the perceptions of 200 level medical students (CCMAS Cohort) and 400level medical students (BMAS Cohort) of Igbinedion University Okada, comparatively.

1.5 Specific Objectives

The research was guided by the following objectives.

- 1.To assess the students' perception of the teaching and assessment methods used in anatomy education at Igbinedion University Okada.
- 2.To determine the level of satisfaction with available anatomy learning resources (e.g. cadavers, models, digital tools).
- 3.To identify challenges faced by students in learning anatomy.
- 4.To evaluate the perceived relevance of anatomy to clinical practice among the students.
- 5.To determine the most helpful materials in learning Anatomy, in their opinion/
6. To compare the perceptions of the BMAS and CCMAS Cohorts.

1.6 Research Questions

- 1.What are the students' perceptions of the teaching and assessment methods used in anatomy education at Igbinedion university okada?
- 2.How satisfied are 200 and 400 level medical students with the anatomy learning resources available?
- 3.What challenges do students encounter in learning anatomy?
- 4.How do students perceive the relevance of anatomy education to their future clinical practice ?
- 5.What learning materials were most helpful in learning Anatomy
6. Is there any significant difference between the perceptions of the BMAS and CCMAS Cohorts ?

1.7 Significance of the Study

- I. Improved learning outcomes: If anatomy is taught more skillfully, medical students will absorb and remember more information.
- II. Better clinical competence: Medical students' clinical proficiency will be enhanced by strengthening the link between anatomy education and clinical practice.
- III. Improved patient care: This study will eventually contribute to better patient care by ensuring that medical graduates possess the knowledge, skills, and attitudes required to provide high-quality healthcare services.
- IV. Overall, this study may significantly impact clinical practice and anatomy education, ultimately leading to better patient outcomes.

1.8 Scope of the Study

Institutional scope: The study focuses on the perceptions and experiences of the medical students at Igbinedion university okada.

Population scope: This study focuses on 200 level (CCMAS Cohort) and 400level (BMAS Cohort) medical students.

1.9 Operational Definition of Terms

For the purpose of consistency and clarity, the following terms have been operationally defined:

Anatomy education: Refers to the formal teaching and learning of human anatomy in a medical school setting, including lectures, dissections, and other educational activities.

Perception: perception in this context refers to how medical students organize and interpret sensory information from their environment to understand and make sense of the world around them. It also implies a deep understanding or insight into a situation or problem, usually based on intuition or experience. Perception is also linked to "the faculty of perceiving" and intuitive knowledge or insight" (Oxford English Dictionary).

Core Curriculum Minimum Academic Standards (CCMAS): The CCMAS is the new curriculum introduced by the NUC (national universities commission) in Nigeria, by that there's a difference between the outspread of anatomy courses, between the current 200level who are using the CCMAS and the current 400level who used the former curriculum (BMAS). Under the CCMAS the anatomy students do more anatomy courses, for instance; dissection which is a practical course is now a five unit course, which was not a separate course under the former curriculum (BMAS) but now it is a full course, anatomy courses are more for the current 200level that's using the CCMAS.

BMAS: Benchmark Minimum Academic Standard.

2 EMPIRICAL REVIEW

Tayyem et al., (2019) revealed that students viewed using a range of approaches, especially multimedia sessions and cadaveric dissections, as capable of improving understanding. (Chapman et al., (2019) in a study showed second-year student at Leeds school of medicine ranked dissection and prosection best and second best strategies respectively for Anatomy education respectively while models, computer software, radiological and living Anatomy scored lower.

Latiff et al.,(2019) showed (79.1%) of medical students as saying Anatomy knowledge was important in performance of invasive treatments and surgeries on patients. Inadequate teaching methods (31%), an integrated curriculum (53%), and subpar assessments (59%), were the primary factors reported by students as affecting their performance in anatomy. Additionally, cadaveric dissection was the most popular study technique among students (72.2%), while traditional lectures were the least popular method (29.9%). Most students (97.3%) agree that more frequent assessments helped them identify their anatomical weak points.

Musa et al., (2023) reported more than four-fifth of 163 preclinical students as enjoying anatomy classes, and 57.1% agree that a strong grasp of anatomy is necessary to become a good doctor. The overwhelming majority of respondents believed that dissection sessions were essential for teaching and comprehending anatomy.

2.1 Knowledge Gap

There is scarcity of local data on medical students' views on teaching methods, assessments and learning resources moreso in the Core Curriculum Minimum Academic Standard (CCMAS) era and how they compare with the BMAS era.

3.0 MATERIALS AND METHODS

3.1 Research Design

A cross-sectional study design was used.

3.2 Study Area

Igbinedion University is situated in Okada, the headquarters of Ovia North-East Local Government Area of Edo state, Nigeria. The town has a tropical climate with two distinct seasons (the rainy season and the dry season) and is encircled by lush vegetation. Because of its rivers, undulating hills, and fertile land, Okada is an excellent place to farm. Along with Okada, other noteworthy communities in the Ovia North-East government region include: Uhen, Utese, Okokhuo, Isiwa, Oluku, Ekiadolor, and others.

3.3 Study Population

Medical Students: 200 level (CCMAS Cohorts) and 400 Level (BMAS Cohorts), at Igbinedion University Okada.

3.4 Sample Size/ Sampling Techniques

The 200 level class had 152 students while the 400 level class had 141 students, both making a total of 293 students. Using Taro Yarmane's formula for a known population, a minimum sample size of 170 was got. However, 172 respondents were investigated. Additionally, a mixed stratified and convenient sampling technique was used. Whereas stratified sampling was used, by this the sample size of 172 response was drawn with 89 from 200level medical students (CCMAS Cohorts) and 83 from 400level medical students (BMAS Cohorts) in line with the proportion of their class populations. Thereafter, convenient sampling was deployed to access the respondents.

3.5 Instrument of Study

The Instrument of study was well structured questionnaire.

3.6 Validity of Instrument

The face and content validity of the instrument was done by the researcher's supervisor and the corrections were infected accordingly.

3.7 Data Collection

Involved the use of a well structured questionnaire. Online questionnaire was administered to 172 respondents. And there was a response rate of 100%.

3.8 Data Analysis

Data was presented using descriptive tools. while the SPSS (Statistical package for the social sciences) software version 25 was used to analyze the data. Chi-square inferential statistical tool was used to test the hypothesis.

3.9 Ethical Approval

Ethical approval was sort and duly granted by the appropriate authority to go ahead and carry out this study.

4 RESULTS

4.1 Sociodemographic Characteristics of Respondents

The study included a total of 172 medical students from Igbinedion University, comprising 89 students at the 200-level (CCMAS Cohorts) and 83 students at the 400-level (BMAS Cohorts). The sociodemographic profile of these respondents provides valuable context for understanding their perceptions of anatomy education.

4.2 Perceived Effectiveness of Teaching Methods in Helping Students Understand Anatomy

Table 4.2 shows students' perceptions of the effectiveness of various teaching methods in facilitating their understanding of Anatomy.

The combined percentage view of very effective and effective of teaching methods was 77.4% for the CCMAS Cohorts and 67,5% for the BMAS Cohorts respectively. The **mean scores are 4.11 and 3.83 respectively** with decision as **effective**.

Table 4.2: How effective were the teaching methods in helping you understand anatomy?

Response category	CCMAS Cohorts(n=89)	Mean	Decision	BMAS Cohorts (n=83)	Mean	Decision
Very Effective	23 (25.8%)			25(30.1%)		
Effective	46 (51.6%)			31(37.4%)		
Neutral	21 (23.5%)			22(26.5%)		
Ineffective	2 (2.3%)			1(1.2%)		
Very Ineffective	0 (0.0%)	4.11	Effective	1(1.2%)	3.83	Effective

Chi-square: $\chi^2=3.73$, df=4, p=0.444

4.3 Perceptions of Whether Assessments Motivate Students to Learn Anatomy

Table 4.3 explores students' perceptions regarding the motivational impact of assessment methods on their learning of anatomy for both Cohorts.

A notable proportion of students strongly agree that assessments motivate their learning, with 37 students (41.6%) for the CCMAS Cohorts and 46 students (55.4%) for the BMAS Cohorts. The **mean scores are 3.82 and 3.95** respectively, while the **decision is agree**.

Table 4.3: Do you think the assessment motivate students to learn anatomy?

Response category	CCMAS Cohorts (n=89)	Mean	Decision	BMAS Cohorts(n=83)	Mean	Decision
Strongly Agree	37 (41.6%)			46(54.5%)		

Agree	0 (0%)			0(0%)		
Neutral	49 (55.1%)			31(37.4%)		
Disagree	4 (4.5%)			2(2.4%)		
Strongly Disagree	0 (0%)	3.82	Agree	1(1.2%)	3.95	Agree

Chi-square: $\chi^2=8.62$, df=4, p=0.071

4.4 Perceptions of Adequacy of Available Anatomy Learning Resources

This section examined students' perceptions regarding whether the anatomy learning resources available to them are sufficient. Although a large number of students at both levels agree that the resources are adequate—42 students (47.2%) (CCMAS) and 28 students (33.7%) (BMAS), a considerable number of students remain neutral, with 30 students (33.7%) and 29 students (35%) respectively, indicating mixed perceptions. The mean scores are 3.38 and 3.21 therefore decision is neutral.

Table 4.4: Were/are the available anatomy learning resources adequate?

Adequateness Level	CCMAS Cohorts(n=89)	Mean	Decision	BMAS Cohorts(n=83)	Mean	Decision
Strongly Agree	3 (3.4%)			8(9.6%)		
Agree	42 (47.2%)			28(33.7%)		
Neutral	30 (33.7%)			29(35%)		
Disagree	13 (14.6%)			13(15.7%)		
Strongly Disagree	2 (2.3%)	3.38	Neutral	2(2.4%)	3.21	Neutral

Chi-square: $\chi^2=5.28$, df=4, p=0.260

4.5 Challenges Faced During Anatomy Learning

Table 4.5 examines the various challenges students reportedly encountered while learning anatomy for both groups. The most reported challenges are overcrowded classes and access to cadaver (39.3% each for the CCMAS group and 24.1% each for the BMAS group).

4.5: what challenges did you face during anatomy learning? (select all that apply)

Challenge	CCMAS Cohorts (n=89)	BMAS Cohorts (n=83)	Total (n=172)
Overcrowded classes	35(39.3%)	20 (24.1%)	55(31.9%)
Limited cadaver access	35(39.3%)	20(24.1%)	55(31.9%)
Complex content	15 (16.8%)	10 (12.1%)	25(14.5%)
Lack of practical application	20 (22.5%)	15 (18.1%)	35(20.3%)
Inadequate teaching time	8(9%)	7(8.4%)	15(8.7%)
Poor learning resources	8 (9%)	6 (7.2%)	14(8.1)

Chi-square: $\chi^2=5.93$, df=5, p=0.313

4.6 Resources Found Most Helpful in Learning Anatomy

Table 4.6 explores the types of resources students find most beneficial for learning anatomy. Atlases/ textbooks were the most reportedly helpful learning resource for both sets of participants: 29.2% (CCMAS participants) and 32.5% (BNAS participants).

4.6: Which resources did u or do you find most helpful in learning anatomy?

Resource category	CCMAS Cohorts (n=89)	BMAS Cohorts(n=83)	Total (n=172)
Cadavers	18 (20.2%)	10 (12.1%)	28(16.2%)
Anatomical models	17 (19.1%)	23 (27.7%)	40(23.2%)
Atlases/Textbooks	26 (29.2%)	27 (32.5%)	53(30.8%)
3D/virtual tools	14 (15.7%)	7 (8.4%)	21(12.2%)
Group discussions/peer teaching	17 (19.1%)	13 (15.7%)	30(17.4%)

Chi-square test : $\chi^2=5.45$, df=4,p=0.245

4.7 Perception of Anatomy's Relevance to Clinical Training and Future Practice

Table 4.7 presents the students' perceptions regarding the importance of anatomy in their clinical training and future medical practice.

A combined percentage of 98.9% of the CCMAS participants either strongly agree or agree that Anatomy is very relevant to their clinical training and practice while the combined figure for the BMAS group is 94%. The **mean scores** are **4.68** and **4.47** respectively with decision as **strongly agree**.

4.6: Do you believe anatomy is relevant to your clinical training or Future practice?

Response Level	CCMAS Cohorts (n=89)	Mean	Decision	BMAS Cohorts(n=83)	Mean	Decision
Strongly Agree	55 (61.8%)			55(66.3%)		
Agree	33(37.1%)			23(27.7%)		
Neutral	3 (3.4%)			1(1.2%)		
Disagree	0 (0%)			0(0%)		
Strongly Disagree	1 (1.1%)	4.68	Strongly agree	1(1.2%)	4.47	Strongly agree

Chi-square: $\chi^2=2.18$, df=4, p=0.702

5. DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Discussion

The discussion is built around the study's objectives, comparing the findings with existing literature.

Students' perceptions of teaching and assessment methods.

The study found that both CCMAS and BMAS groups perceive teaching methods as effective, with mean scores of 4.11 and 3.83 respectively. The decision for both, therefore is effective. As for whether assessment methods motivate them to learn, the mean scores of 3.82 and 3.95 for both levels necessitated the decision of 'agree' These findings are consistent with Latiff et al.'s (2019) study which found that students perceived continuous assessments as helpful in identifying their weaknesses in anatomy.

Perception of availability of Anatomy learning resources

A considerable number of students remain neutral (33.7% for the CCMAS cohorts and 35% for the BMAS cohorts), indicating room for improvement in resource availability and quality. This study found that both sets of students are neutral about the adequacy of anatomy learning resources, with mean scores of 3.38 and 3.21 respectively. This finding is consistent with Owolabi et al.'s (2020) study that found Nigerian students perceived their training as limited in practical and experiential learning.

Challenges in learning anatomy

Overcrowded classes and access to cadaver scored highest in the list of challenges faced by the CCMAS group with 39.3% each. Similarly, both challenges also came tops for the BMAS group with 24.1% each. These findings are consistent with Chia and Oyeniran's (2019) review that highlighted challenges in anatomy education in Nigeria, including scarcity of cadavers, manpower shortages, and insufficient funding.

Resources found most helpful in learning Anatomy

For both sets of participants, Atlases/textbooks were the most useful learning materials: 29.2% (CCMAS) and 32.5% (BMAS) respectively.

Relevance of anatomy education to future clinical practice

This study found that both student groups strongly believe that anatomy is relevant to their clinical training and future practice, with mean scores of 4.68 and 4.47 respectively. This finding is consistent with latiff et al.'s (2019) study that found students perceived anatomy as essential for being a safe and competent doctor.

Differences in perception between BMAS and CCMAS Cohorts.

None of the chi-square tests reached the conventional $p < 0.05$ threshold. Therefore, there is no statistically significant difference between the CCMAS and BMAS Cohorts across resources, effectiveness, adequacy, challenges or relevance. The closest was assessment motivation with $p=0.071$.

5.2 Conclusion

The findings show that there is no significant difference in the Cohorts perceptions of Anatomy education. The change in Curriculum has not brought about significant change in perception yet.

5.3 Recommendations

Based on the findings, the following recommendations are made:

1. Improve practical classes: Increase hands-on learning opportunities, particularly in dissection and practical applications.
2. Enhance resource availability: Improve the quality and quantity of anatomy learning resources, including cadavers, models, and virtual tools.
3. Address challenges: Reduce class sizes, increase cadaver access, and provide additional support for complex content.
4. Regular evaluations: Conduct regular evaluations of teaching methods, assessment approaches, and resource availability to ensure that they meet the needs of students.

Suggestion for Further Studies

There should be a cohort study to follow up the CCMAS students over two to three years to clearly evaluate the new curriculum with regards to Anatomy education in medical schools as it is still relatively new.

REFERENCES

1. Chapman, S.J., Hakeem, A. R., Marangoni, G., & Prasad, K. R. (2019). Perception of undergraduate medical students. Department of HPM and Transplant Surgery, St James's University Hospital NHS Trust, Leeds Teaching Hospitals.
2. Chia, T., & Oyeniran, O.I. (2019). Anatomy education in Nigeria: Challenges and prospects.
3. Drake, R. L., McBride, J. M., & Lachman, N. (2014). Why dissection? Journal of the American Medical Association, 312(6), 571-572.
4. Drake, R. L., McBride, J. M., Lachman, N., & Pawlina, W. (2009). Medical education in the anatomical sciences: The winds of change continue to blow. Anatomical Sciences Education, 2(6), 253-259.
5. Drake, R. L., McBride, J. M., & Pawlina, W. (2014). Gray's anatomy for students (3rd ed.). Elsevier.
6. Latiff, A. A., Kamarzaman, S., Manan, N.A., Rampal, K. G., Muniandy, B.K. (2019). Students perception on anatomy education in cyberjaya University College of medical sciences, Malaysia.
7. Moore, K. L., & Dalley, A. F. (2006). Clinically oriented anatomy (5th ed.). Lippincott Williams & Wilkins.
8. Moore, K. L., Dalley, A. F., & Agur, A. M. R. (2018). Clinically oriented anatomy (8th ed.). Wolters Kluwer.
9. Moxham, B. J., Plaisant, O., & Smith, C. F. (2016). From theory to practice: The role of anatomy in clinical medicine. Journal of Anatomy, 229(1), 3-11.
10. Musa, A. A., Zagga, A. D., & Bello, R. (2023). Anatomy education in Nigeria: The viewpoints of medical students.
11. Netter, F. H. (2019). Atlas of human anatomy (7th ed.). Elsevier.

12. Owolabi, J., Faviyi, O. S., Ogunbiyi, O.E., & Ayorinde, F. O. (2020). Anatomy education in Nigeria: An empirical study of students' knowledge and perceptions on training and projects towards meeting the country's need.
13. Oxford University Press. (n.d.). Oxford dictionary of English (3rd ed.). Oxford University Press.
14. Parker, L. M. (2002). Anatomical dissection: A vanishing art? Medical Journal of Australia, 177(6), 328-330.
15. Smite, J., Johnson, K., & Williams, P. (2019). The Importance of anatomy education in medical training: A review. Medical Teacher, 41(1), 10-18.
16. Tayyem, R., Qandeel, H., Qsous, G., Badran, D., & Bani-Hani, K. (2019). Medical students' perception of current undergraduate anatomy teaching. international journal of morphology, 37(3), 829.