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Students' Evaluation of Lecturer Performance and Teaching Effectiveness in Basic Science Courses at a Nigerian Private Medical University: A Cross-sectional Descriptive Study

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Abstract

Background

Institutional quality control in private medical education in Sub-Saharan Africa relies heavily on instructional standards. This study evaluated student perceptions of lecturer performance across nine basic science courses at a private medical university in Nigeria to determine the key predictors of teaching effectiveness and student satisfaction.

Methods

Utilizing a cross-sectional descriptive design, a validated 21-item questionnaire was administered to 100-level medical and allied health science students (n = 197, response rate: 98.5%). Data evaluating dimensions like punctuality, fairness, engagement, and responsiveness were analyzed via descriptive statistics, two-way ANOVA, and multiple regression analysis.

Results

Core science courses (Mathematics, Biology, Chemistry) received "Excellent" mean ratings (4.46 − 4.73), while Physics and Medical Sociology scored lower (3.87 − 4.04), particularly due to deficiencies in punctuality and responsiveness. Two-way ANOVA confirmed significant interaction effects between evaluation dimensions and courses ($F(152,5220) = 6.34, p<.001$). Multiple regression indicated that all factors accounted for 82.5% of the variance in overall satisfaction ($R2 = 0.825$), with Course Delivery ($\beta = 0.33, p<.001$), Motivation and Engagement ($\beta = 0.24, p<.001$), and Classroom Management ($\beta = 0.19, p<.001$) acting as the strongest positive predictors. Qualitative comments highlighted concerns regarding delivery speed, delayed grading feedback, and classroom control.

Conclusions

While overall teaching effectiveness is highly rated in core sciences, systemic improvements in lecturer responsiveness, regular attendance, interactive pedagogies, and prompt feedback mechanisms are required to optimize foundational medical education.

Background

An essential component of institutional development and quality control in higher education is lecturer evaluation. Assessing lecturer performance offers crucial feedback for raising learner satisfaction and instructional effectiveness in the context of Nigerian private universities, where teaching quality has a direct impact on institutional reputation, student retention, and overall competitiveness [1]. Even though private higher education in Nigeria is growing quickly, differences in student participation, pedagogical

training, and teaching standards nevertheless compromise academic results and instructional quality [1]. Therefore, in addition to being a tool for assessing teaching effectiveness, effective evaluation also acts as a means of encouraging lecturers to be more accountable and to continue their professional development [1].

The term "lecturing approach" describes the technique or plan used by instructors to present course material, aid in understanding, and keep students interested during class [1]. Conventional lecture methods emphasize information transfer with little student involvement and are mostly teacher-centered [1]. However, contemporary learner-centered methods encourage active engagement through problem-based learning, flipped classrooms, interactive lectures, and group discussions [2, 3, 4]. The method used has a big impact on students' understanding, drive, and participation in class [1]. In order to improve learning effectiveness and satisfaction, a well-designed method incorporates communication skills, instructional planning, and assessment strategies that are in line with course objectives and a variety of learning styles [1].

It is commonly acknowledged that students' assessments of lecturers' performance serve as a reliable indicator of both the caliber of instruction and the efficacy of the institution [1]. Evaluations usually take into account things like responsiveness, fairness, excitement, preparation, and timeliness [5]. When used properly, these tests offer insightful information for academic decision-making about curriculum development, training, and lecturer promotion [1]. However, their reliability may be diminished by subjectivity, leniency bias, and inconsistent evaluation standards [6, 7].

Higher education institutions' capacity to provide high-quality instruction, carry out significant research, and support community development is reflected in their institutional performance [8]. In this regard, the three main aspects of lecturer performance—responsiveness, fairness, and engagement—act as gauges of how well a lecture is taught [1]. Engagement describes how lecturers motivate and involve students in active learning [9], fairness ensures impartial grading and feedback [10], while responsiveness reflects lecturers’ willingness to address students’ needs and adapt teaching strategies [1]. Research indicates that student-centered pedagogies, feedback systems, and lecturer motivation are important factors that influence teaching success [5, 11]. Clinical teacher evaluation remains a foundation of medical education, providing structural feedback on academic staff performance [12]. In Nigeria, evaluating performance has historically relied on incomplete baseline criteria, creating a clear gap in quality assurance systems [13].

Large class numbers, a lack of faculty training in contemporary teaching techniques, and a lack of emphasis on evaluation-based development are just a few of the pedagogical issues that private colleges in Nigeria continue to encounter [1]. Thus, this study examines how students at a private medical university rate their teachers in nine Basic Science courses [1]. It aims to identify the variables affecting how lecturers are perceived as performing as well as how qualities like involvement, fairness, preparation, and timeliness influence total student happiness [1]. The results are intended to offer evidence-based perspectives to improve learning experiences, improve teaching quality, and fortify

lecturer assessment systems in Nigerian higher education, serving as an architectural blueprint for similar emerging private medical training institutions across regional low- and middle-income nations [1].

Aim and Objectives

This study aimed to analyze students' evaluations of lecturers in nine basic science courses at a private medical university in Nigeria to determine the main predictors of teaching effectiveness and student satisfaction .

The specific objectives were to:

1. Assess students' perceptions of lecturer performance across multiple dimensions, including punctuality, fairness, engagement, and responsiveness .
2. Identify key factors that influence overall student satisfaction and lecturer effectiveness .
3. Determine key themes from students' qualitative feedback and develop evidence-based strategies for improving lecturer engagement, responsiveness, and overall teaching quality across courses .

Methods

Design of Study

This study examined how 100-level students at a private medical university's Basic Science Unit perceived the performance of their professors using a cross-sectional descriptive methodology. The architecture made it possible to gather data all at once, providing a snapshot of student evaluations from a variety of courses .

Study Population and Setting

All 100-level students taking nine Basic Science courses at PAMO University of Medical Sciences, a private medical university in Port Harcourt, Rivers State, Nigeria, participated in the study. With a Basic Science Unit that oversees core courses like Biology, Chemistry, Physics, Mathematics, and General Studies, the university provides undergraduate programs in Medicine, Nursing, and Allied Health Sciences. Because of the limited cohort size, all 200 students who were enrolled in the 2023–2024 academic year made up the target study population [14].

Sample and Sampling Technique

Using a straightforward random sampling method, 200 students were chosen at random from the nine Basic Science courses. Course directors provided class lists, and participants were identified using random numbers to guarantee equal representation in each course. Participation was restricted to students who were formally enrolled in and attended 100-level Basic Science courses during the 2023–

2024 academic year. Additionally, the analysis only included students who filled out the entire lecturer assessment questionnaire. To preserve the quality and dependability of the data set, students who refused to participate, failed to give their assent, or turned in incomplete assessment forms were not included. By removing bias from non-participation or incomplete data, our sampling technique made sure that the replies accurately represented the experiences of engaged 100-level students. The final analyzed sample size consisted of 197 valid responses. The list of courses evaluated in this study, including credit load and lecture hours, is presented in Table 1.

Table 1
List of courses evaluated in this study (LH - Lecture Hours per week; PH - Practical Hours per week) .

Course Code	Course Title	Credit Load	LH	PH
BIO 102	General Biology II	2	30	-
BIO 108	General Biology Practical II	1	-	45
CHM 102	General Chemistry II	2	30	-
CHM 108	General Chemistry Practical II	1	-	45
MTH 102	Elementary Mathematics II	2	30	-
PHY 102	General Physics II	2	30	-
PHY 108	General Physics II	1	-	45
GST 112	Nigerian Peoples and Culture	2	30	-
MED 112	Medical Sociology	2	30	-
TOTAL		**15**		

Questionnaire Contents, Validity, and Reliability

A standardized 21-item questionnaire with 20 closed-ended and 1 open-ended questions was used to gather data (Additional File 1). The tool was created to evaluate several aspects of lecturers' performance and efficacy as teachers. In particular, it assessed students' motivation and engagement, fairness and impartiality, responsiveness and student assistance, classroom management, preparation and teaching quality, course organization and transparency, and course delivery efficacy. Heterogeneous coding was employed for closed-ended items (Q1: 0/1/3; most items: 1–3; Q20: 1–5). Each item was linearly re-scaled to a 1–5 metric using min–max transformation in order to harmonize scores for scale construction and inferential analysis [15]. Prior to scaling, items with greater initial scores denoting poorer performance were reverse coded. The single open-ended question provided respondents with the opportunity to express additional comments or suggestions on lecturer performance and teaching improvement .

Before being administered, the questionnaire was pilot-tested for consistency and clarity and approved by two educational measurement specialists. Internal consistency was evaluated using Cronbach's alpha and McDonald's omega, which produced excellent coefficients of 0.95 and 0.96, respectively .

Data Analysis

To guarantee complete participation, the surveys were given out in person at the conclusion of the semester. Forms were checked for accuracy and completeness. JASP (Version 0.18.2, 2024) was used to evaluate quantitative data and calculate multiple regression models, analysis of variance (ANOVA), and descriptive statistics. To find reoccurring problems, open-ended questions' qualitative data was thematically categorized .

Results

Demographic Characteristics of Participants

Out of 200 distributed surveys, 197 were validly returned, yielding an exceptionally strong questionnaire return rate of 98.5%. The sample consisted of 68 males (34.0%) and 132 females (66.0%). All participants were 100-level students spanning an age range of 16–21 years, consistent with typical entry demographics for health sciences in Nigeria [16]. The detailed demographic characteristics of the participants are summarized in Table 2.

Table 2
Demographic Characteristics of Participants .

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	68	34.0
	Female	132	66.0
Age (Years)	16–21	200	100.0
Total		**200**	**100.0**

Lecturer Performance Evaluation Across Courses

Descriptive means highlighted strong variations across fields. Core biological, mathematical, and chemical courses scored uniformly within the "Excellent" range, whereas physics components and medical sociology displayed significantly lower average scores. The mean evaluation scores for lecturer performance by course are presented in Table 3.

Table 3
Students' Assessments of Lecturer Performance by Course .

Courses Evaluated	Mean	SD	Interpretation
BIO 102 – General Biology II	4.58	0.65	Excellent
BIO 108 – General Biology Practical II	4.60	0.72	Excellent
CHM 102 – General Chemistry II	4.65	0.58	Excellent
CHM 108 – General Chemistry Practical II	4.46	0.53	Very Good
MTH 102 – Elementary Mathematics II	4.73	0.55	Excellent
PHY 102 – General Physics II	3.96	1.08	Fair - Good
PHY 108 – General Physics Practical II	4.04	1.10	Good
GST 112 – Nigerian Peoples and Culture	4.40	1.02	Very Good
MED 112 – Medical Sociology	3.87	1.05	Fair - Good

Furthermore, the breakdown of students' evaluation responses categorized by specific lecturer performance factors across all courses is detailed in Table 4.

Table 4
Students' Evaluation Responses by Lecturer Performance Factors .

Performance Factor	Predominantly "Always/Excellent" (≥ 90%)	Moderate/Variable ("Sometimes/Never" >20%)	Interpretation
Motivation & Engagement	BIO 102, BIO 108, CHM 102, MTH 102	PHY 102, PHY 108, MED 112	High engagement in core sciences; lower motivation markers in Physics and Sociology .
Course Organization	BIO 102, CHM 102, MTH 102	PHY 102, GST 112	Outline compliance strong in core sciences; less consistent in Physics/GST .
Fairness & Impartiality	BIO 102, MTH 102, BIO 108	PHY 102, GST 112	High impartiality marks in Biology/Math; mixed ratings in Physics and GST .
Responsiveness & Support	BIO 102, CHM 102	PHY 102, PHY 108, GST 112, MED 112	Strongest supportive infrastructure in Biology/Chemistry .
Teaching Quality & Prep	BIO 102, CHM 102, MTH 102	PHY 102, MED 112	High mastery perceived in sciences; delivery/preparation lapses in Physics/Sociology .
Classroom Management	BIO 102, CHM 102, MTH 102, PHY 102, PHY 108	MED 112	Strong management globally; localized punctuality lapses in Medical Sociology .
Course Delivery	BIO 102, CHM 102, MTH 102	PHY 102, GST 112, MED 112	High structural effectiveness in core fields; trailing in elective/applied subjects .

Inferential Analysis of Evaluation Elements

A two-way ANOVA evaluated the interactions between the question evaluation dimension and the particular course. Both components exerted highly significant independent impacts alongside a notable cross-interaction. The two-way ANOVA summary showing the effects of question type and course on students' evaluation of lecturer performance is shown in Table 5.

Table 5
Two-Way ANOVA Summary Showing the Effects of Question Type and Course on Students' Evaluation of Lecturer Performance .

Cases	Sum of Squares	df	Mean Square	F	p
Question	889.3	19	46.805	185.190	< .001
Course	144.2	8	18.023	71.312	< .001
Question × Course	243.6	152	1.603	6.342	< .001
Residuals	1319.3	5220	0.253		

Multiple linear regression revealed that the evaluation sub-dimensions explained 82.5% of total student satisfaction (R = 0.909,R2 = 0.825,Adjusted R2 = 0.812,F(19,250) = 62.21,p<.001). The results of this regression analysis and the predictive weights of individual performance factors are summarized in Table 6.

Table 6
Lecturer Performance Factors as Predictors of Overall Student Satisfaction via Regression Analysis .

Performance Factor	Std. Beta (β)	t-value	p-value	Direction	Key Interpretation
Motivation & Engagement	0.24	3.91	< .001	↑	Strong positive predictor .
Course Organization	0.12	2.34	0.020	↑	Transparency improves satisfaction .
Fairness & Impartiality	-0.09	-2.13	0.034	↓	Perceived unfairness reduces ratings .
Responsiveness & Support	-0.11	-2.55	0.011	↓	Weak feedback channels harm evaluation .
Teaching Quality & Prep	0.18	2.99	0.003	↑	Subject mastery ensures high ratings .
Classroom Management	0.19	4.91	< .001	↑	Regularity improves professionalism marks .
Course Delivery	0.33	5.47	< .001	↑	**Strongest overall satisfaction predictor** .

Discussion

Our results indicate a generally high level of pedagogical satisfaction within core foundational fields such as biology, chemistry, and mathematics, aligned with structural clarity and teacher preparation benchmarks. These quantitative findings are consistent with those of Gómez and Valdés [11], who observed that clear course structure and lecturer readiness improve assessments of instruction. In a similar vein, Goos and Salomons [7] found that fairness and organized delivery have a big impact on how

well students think their instruction is. The findings also support those of Nasser and Alhija [11], who highlight that students' evaluations of lecturers' efficacy heavily depend on their judgments of fairness and clarity.

The high predictor weight for *Course Delivery* and *Motivation* highlights that students track subject mastery alongside instructional behavior. This is consistent with the findings of Gao, Zhuang, and Chang [17], who found a strong correlation between course organization and teaching quality and student satisfaction in higher education. The interconnectedness between lecturer preparation, student happiness, and teaching quality was also emphasized by Olmos-Gómez et al. [18]. Lastly, Venkateswarlu, Malaviya, and Vinay [19] reaffirmed that key factors influencing student satisfaction and instructional performance in higher education include motivation, delivery quality, and feedback mechanisms.

Table 7
Synopsis of Open-Ended Student Feedback on Instructor Performance in All Courses .

Course Code	Course Title	Dominant Themes/Comments	Frequency Trend / Interpretation
BIO 102	General Biology II	Course was good; suggestions to reduce slides and avoid rushing .	Mostly positive; minor emphasis on pacing .
BIO 108	Gen. Biology Prac. II	Calls for better preparation, control, and advance materials .	Moderate satisfaction; practical logistics need work .
CHM 102	General Chemistry II	Strongly positive; isolated requests for audibility and patience .	Favorable with minor localized issues .
CHM 108	Gen. Chemistry Prac. II	Suggestions for interactive teaching, quizzes, and textbooks .	Highly satisfied; focus on active engagement .
GST 112	Nigerian Peoples/Culture	Requests for concise materials and better class control .	Moderate engagement; seen as less interactive .
MED 112	Medical Sociology	Strong calls for regular attendance and availability .	Persistent concern over lecturer availability .
MTH 102	Elementary Math II	Highly positive; requests for extra focus on tough topics .	High satisfaction; minimal changes needed .
PHY 102	General Physics II	Recurrent concerns about lecturer speed and delivery clarity .	Dissatisfaction regarding pacing and clarity .
PHY 108	General Physics Prac. II	Focus on instrument availability, preparation, and timely marking .	Mixed responses; highlights feedback loops .

The qualitative themes extracted from Table 7 offer contextual support for the negative regression paths observed in responsiveness and fairness. Pacing mismatches in Physics (PHY 102) and availability deficits in Medical Sociology (MED 112) demonstrate that communication breakdowns directly erode evaluation values. This result is in line with that of Wong and Chapman [20], who showed that interaction between students and lecturers greatly increases engagement and happiness in higher education

settings. In a similar vein, Caldwell et al. [21] highlighted that instructor preparedness, clarity, and responsiveness are frequently cited as key factors in qualitative student assessments as indicators of teaching effectiveness. The structural focus on regularized feedback cycles observed in practical formats (PHY 108) echoes Trejo and Ginsberg's [22] findings that continuous, constructive feedback pathways foster improved faculty-student relationships and mitigate assessment biases.

Limitations

This study is limited by its cross-sectional design and its focus on a single private medical university cohort within a specific academic session. While it provides deep diagnostic tracking for institutional quality assurance in Nigerian private medical education, caution must be exercised when generalizing these metrics to larger public health institutions that operate under differing student-to-teacher ratios and resource constraints .

Conclusions

Teaching quality was indicated by the generally excellent ratings obtained from the evaluation of lecturers' performance throughout courses, especially in core science areas. The results of the performance factor analysis demonstrated that the most important determinants of student satisfaction were classroom management, motivation, and course delivery, underscoring the significance of engaging and organized instruction. The need to increase lecturer responsiveness, feedback systems, and engagement tactics was also highlighted by qualitative feedback, which offered guidance for research-based enhancements in the caliber of instruction and the educational experiences of students globally within expanding health sciences infrastructure.

Abbreviations

- **ANOVA:** Analysis of Variance
- **APC:** Article Processing Charge
- **BIO:** Biology
- **CHM:** Chemistry
- **GST:** General Studies
- **LH:** Lecture Hours
- **MED:** Medical Sociology
- **MTH:** Mathematics
- **PH:** Practical Hours
- **PHY:** Physics

Declarations

Ethics approval and consent to participate

Ethical permission for this study was granted by the Research Ethics Committee of PAMO University of Medical Sciences, Port Harcourt, Nigeria. All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Participation was completely voluntary, and written or verbal informed consent was formally obtained from all participants prior to questionnaire administration, ensuring complete anonymity and confidentiality.

Consent for publication

Not applicable. The manuscript contains no individual person's detailed data, images, videos, or direct personal identifiers.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

- **Kolawole T.A.:** Conceptualization, manuscript drafting, and questionnaire development.
- **Nwachukwu D.C.:** Coordination, data collection tracking, data analysis oversight, and manuscript revisions.
- **Nwokocha M.:** Methodological optimization, statistical interpretation review, and editing.
- **Saronee F.:** Data field entry, literature documentation, and organizational support.
- **Mato C.N.:** Institutional quality control checks, validation of analytical metrics, and final critique.

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