

Evaluation of rheumatology lectures by clinical students in a Nigerian medical school: learning from the learners

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Abstract

Objectives: To identify the most and least preferred rheumatology lectures, the proportional increase in students able to identify rheumatic conditions after the lectures as well as evaluate resident teaching effectiveness.

Methods: All 134 clinical students in the University of Uyo Medical School, South-south Nigeria were asked to evaluate their rheumatology lectures using a self-administered instrument containing the augmented Stanford Faculty Development Performance Questionnaire (aSFDPQ). Mann-Whitney U test was used for ordinal data with $p < 0.05$.

Results: Response rate was 126 (94%) with 78 (61.9%) males. Rheumatoid arthritis was best preferred by 63 (50%) students while 42 (33.3%) of them cited spondyloarthropathies as their worst topic. Twenty six (20.6%) students identified a rheumatic condition before the lectures compared to 57 (45.2%) after the classes. Mean aSFDPQ score was 3.76 ± 0.47 . Best and least domains were learning climate (4.03) and evaluation (3.39). Mann-Whitney U values ranged from ($1647.5 < U < 1869.5$), ($0.257 < p < 0.990$) with no significant aSFDPQ difference by gender ($p = 0.825$) or year of study ($p = 0.162$). Mean global teacher rating was $74.64 \pm 13.65\%$.

Conclusions: Rheumatoid arthritis and spondyloarthropathies were the most and least preferred topics respectively. The proportion of students able to identify rheumatic conditions after the lectures increased by 24.6%. Despite good global rating (74.6%), teaching effectiveness was suboptimal (mean aSFDPQ < 4.0). Formal pedagogic training is urgently needed to improve residents' teaching effectiveness in Nigeria.

Key words: Student evaluation, Rheumatology lectures, Medical education

Introduction

With declining mortality rates, increasing life expectancy and ageing populations, the burden of musculoskeletal diseases (MSK) is rapidly increasing¹ and this has been highlighted in the global burden of diseases study 2016 where MSK conditions ranked first accounting for 17.1% of the total number of Years Lived with Disability (YLDs)².

Despite this, there appears to be a disparity between the enormous burden and the level of awareness of rheumatic diseases even among doctors^{3,4}. This problem can be traced back to the undergraduate level, where knowledge of rheumatic and musculoskeletal diseases remains grossly inadequate^{3,5,6}. There is thus a need to improve undergraduate training of rheumatology^{3,7} and this is increasingly being reflected in medical curricula worldwide^{8,9} with encouraging results¹⁰.

The situation in sub-Saharan Africa is much worse as there are very few rheumatologists relative to the population¹¹⁻¹³. In Nigeria, only 10 out of 30 medical schools teach rheumatology¹⁴ due to the unavailability of consultant rheumatologists with some having to make do with specialist senior residents. The latter situation obtains in the University of Uyo Medical School, (a relatively young medical school in South-south Nigeria with first set of graduates in 2011) where rheumatology lectures only became regularly taught in the past two years by a rheumatology senior resident from the affiliated tertiary hospital. Notably, a previous study in the same hospital by some orthopaedic surgeons had shown inadequate musculoskeletal competency among pre-internship medical graduates from different medical schools across the country¹⁵.

Considering the fact that specialist residents are still under training, there is a need to evaluate the quality of their

lectures. Although, the effectiveness of residents as teachers has been assessed in a Nigerian medical school using a validated tool¹⁶, to the best of our knowledge, there is no known student-based evaluation of rheumatology lectures in a similar setting.

This study aims to identify the most and least enjoyable lecture topics preferred by the students, highlight the proportional increase in students able to identify common rheumatic conditions after the lectures and evaluate the effectiveness of rheumatology lectures using the augmented Stanford Faculty Development Performance Questionnaire (aSFDPQ)¹⁷.

Materials and methods

All the 134 fourth to final year medical students in the University of Uyo Medical School, South-south Nigeria were asked to evaluate their rheumatology lectures using a self-administered questionnaire after informed consent. Respondents were free to abstain without any repercussions.

This student-based assessment was performed during their second 8-week clinical rotation in the Department of Internal Medicine after they had received didactic lectures on various topics in rheumatology including overview of rheumatic diseases, basic signs, symptoms and investigations in rheumatology, Systemic Lupus Erythematosus (SLE), Rheumatoid Arthritis (RA), Crystal Arthropathies, Spondyloarthropathies (SpAs), Sjogren's syndrome and systemic sclerosis.

Each class received an average of three rheumatology lectures during their medicine posting with the total series completed by final year. Each lecture topic lasted for one hour and lectures held on Mondays. Institutional ethical approval was obtained for the study.

Instrument: The study instrument was in two parts. The first part of the study instrument had 14 closed and open ended questions that assessed demographics, number and type of rheumatology lectures received, best and worst lectures with reasons, suggestions for lecture improvement as well as the proportion of students who successfully identified rheumatic conditions before and after the lectures.

The second part of the study instrument contained the 66-item augmented Stanford Faculty Development Performance Questionnaire (aSFDPQ)¹⁷ consisting of 65 Likert-type questions in 9 domains each rated from 1 (strongly disagree) to 5 (strongly agree) and a single global rating question ranging from 0 (poor teacher) to 100 (outstanding teacher). The original SFDPQ^{18,19} contains 58 questions in 8 domains and has been used to

evaluate residents as teachers with proven validity and reliability²⁰. The aSFDPQ has been previously validated in a Nigerian setting^{16,17}.

Assessment: Each class received the questionnaire after completing the specified set of rheumatology lectures earmarked for them. Respondents were asked to fill out the questionnaires anonymously. To avoid bias, the lecturer was not present when the study instrument was being administered.

Data analysis: Domain and total scores were generated and summarized using measures of central tendency and dispersion. A score of 4 on the aSFDPQ indicates that the student agrees that the teacher possesses the relevant skill while a score of 5 indicates excellent demonstration of the skill. Analysis of ordinal domain scores was done using Mann-Whitney U test. Statistical significance was set at $p < 0.05$. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 22.

Institutional review board approval: The study was approved by the University of Uyo Teaching Hospital ethical committee prior to its commencement with informed consent granted by all participants.

Results

All 134 fourth to final year medical students of the University of Uyo Medical school, Uyo, South-south Nigeria were assessed. This comprised 61 fourth year, 40 fifth year and 33 final year students. One hundred and twenty six questionnaires were returned giving a response rate of 94%. There were 78 (61.9%) males and 48 (38.1%) females. Mean age was 22.9 ± 2.6 years. Fourth year students had an average of 2 lectures, 5th year had 5 lectures while final year had an average of 7 lectures. Baseline characteristics of the participants are as shown in Table 1.

Table 1: Baseline characteristics of study participants

Variable mean \pm SD), n (%)	Male	Female	Total
Age	23.36 \pm 2.73	22.22 \pm 2.05	22.96 \pm 2.57
Sex	78 (61.9)	48 (38.1)	126 (100)
Class			
Year 4	32 (25.4)	26 (20.6)	58 (46)
Year 5	25 (19.8)	12 (9.5)	37 (29.4)
Year 6	21 (16.7)	10 (7.9)	31 (24.6)

From the 8 listed topics taught to the students, half (n=63, 50.0%) identified Rheumatoid Arthritis (RA) as the most enjoyed/understood subject overall with the following reasons: well explained/illustrated (52.4%), morning class (21.4%), topic read before class (13.5%) and simple/easy topic (12.7%). Forty two (33.3%) of the participants cited spondyloarthropathies (SpAs) as their least understood topic. Reasons given were as follows: difficult/complex topic (30.1%), did not read the topic (27.8%), afternoon class (25.4%) and poorly explained/illustrated (16.7%). Figure 1 outlines the best and least enjoyed rheumatology topics preferred by the students while Table 2 shows the reasons for their choice.

Table 2: Reasons for students' preference of rheumatology topics

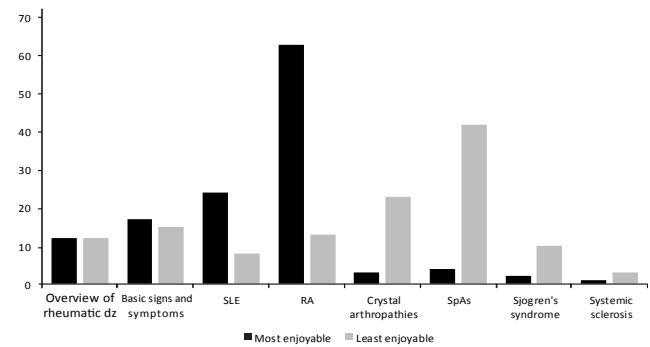
Best understood topic (rheumatoid arthritis)	
Reasons	(%)
Well explained/illustrated	52.4
Morning class	21.4
Read topic before class	13.5
Simple/easy topic	12.7
Least understood topic (spondyloarthropathies)	
Reasons	(%)
Difficult/complex topic	30.1
Did not read topic before class	27.8
Afternoon class	25.4
Poorly explained/illustrated	16.7%

Table 3: Teaching skill evaluation of rheumatology resident

S/N	Domains	No. of items	Mean (SD) Total	Mean (SD)	Mean (SD)	P-value
				Male	Female	
1	Learning climate	8	4.03 (0.57)	3.98 (0.57)	4.11 (0.56)	0.257
2	Control of session	7	3.68 (0.63)	3.71 (0.68)	3.64 (0.54)	0.426
3	Communication of goals	8	3.61 (0.64)	3.63 (0.67)	3.57 (0.58)	0.475
4	Promoting understanding and retention	8	3.87 (0.63)	3.84 (0.72)	3.91 (0.43)	0.988
5	Evaluation	7	3.39 (0.80)	3.36 (0.86)	3.45 (0.68)	0.990
6	Feedback	7	3.57 (0.69)	3.53 (0.76)	3.64 (0.50)	0.372
7	Promoting self-directed learning	8	3.73 (0.60)	3.70 (0.66)	3.77 (0.50)	0.823
8	Teacher's knowledge	5	3.94 (0.75)	3.91 (0.70)	4.00 (0.77)	0.577
9	Teacher's attitude	7	4.00 (0.65)	3.95 (0.72)	4.08 (0.50)	0.392
	SFDPQ (domains 1-8)	58	3.73 (0.48)	3.71 (0.54)	3.75 (0.38)	0.904
	ASFDPQ (all domains)	65	3.76 (0.47)	3.73 (0.54)	3.78 (0.36)	0.825

SFDPQ=Stanford Faculty Development Program Questionnaire; ASFDPQ=Augmented Stanford Faculty Development Program Questionnaire

Figure 1: Evaluation of rheumatology lectures by 126 medical students



Prior to the lectures, 26 (20.6%) students indicated that they could recognize at least one rheumatic condition. This number rose to 57 (45.2%) after the lectures representing an increase of 24.6% (p=0.001). Suggestions for lecture improvement were wide-ranging including: more morning classes, use of clinical scenarios, rheumatology postings, video and live demonstrations as well as increasing lecture duration among others.

The mean total SFDPQ and aSFDPQ scores were 3.73±0.48 and 3.76±0.47 respectively. The 2 highest scoring domains were: Learning climate (4.03±0.57) and teacher's attitude (4.00±0.65). The lowest scoring domain was evaluation (3.39±0.80). Mann Whitney U domain values ranged from (1647.5<Mann Whitney U<1869.5), with no significant differences by gender (0.257<p<0.990). Furthermore, analysis revealed no significant differences in total SFDPQ or aSFDPQ scores by year of study (p = 0.185 and 0.162 respectively). Table 3 shows the domain and total aSFDPQ scores of our study population. The mean global teacher rating was 74.64±13.65 with a range from 40-100.

The questionnaire used a closed, Likert-type format, with 5 ordinal scale options per item (1 - strongly disagree, 2 - disagree, 3 - neither agree nor disagree, 4 - agree, and 5 - strongly agree). A score of 5 indicates excellent demonstration of the corresponding teaching skill.

Discussion

The baseline characteristics of our study population are similar to that of a previous Nigerian study assessing teaching quality of residents²¹. The response rate of 94% was satisfactory.

Rheumatoid Arthritis (RA) was the best understood subject by half of the students and this was largely attributed to good explanations/illustrations. Apart from the fact that rheumatoid arthritis is a popular rheumatology topic, the fourth year class had a live patient demonstration when their lecture coincided with the patient's clinic visit and this may have aided understanding and appreciation of the topic. Knowledge of rheumatoid arthritis has been shown to improve with both standard teaching²² and patient demonstration²³.

Spondyloarthropathies (SpAs) was identified as the least understood subject by one-third of the students. Apart from being relatively less common compared to rheumatoid arthritis, most students found the topic difficult and this may be due to the fact that it is not a single disease but a heterogeneous group of diseases with similar features. It may be more beneficial for the students in the future to teach the different subtypes over several lectures rather than a single lecture session.

The significant increase (24.1%, $p < 0.01$) in the number of students who could identify rheumatic conditions after the lectures is encouraging given the limited number of lectures and exposure to rheumatology patients. Similar improvements have been demonstrated in a different setting⁷ and strengthen the case for increased inclusion of rheumatology lectures in medical curricula in Nigeria and elsewhere in Africa²⁴.

Mean total SFDPQ and aSFDPQ scores were suboptimal as shown in Table 3. The highest scores were obtained in 2 domains (Learning Climate and Teacher's attitude). The lowest was obtained in the evaluation domain. Owolabi *et al*¹⁶ had noted similar suboptimal performance of residents with best scores obtained in Learning climate and Teacher's attitude in agreement with our study. A Dutch study also showed a high score

in teacher's attitude domain²⁵ during faculty evaluation by residents. Similar Nigerian student-based evaluations using different tools have shown high scores in domains for Teacher's Attitude²¹ and learning environment²⁶.

Evaluation domain was the lowest in our study which was a student-based assessment of didactic lectures contrary to the finding by Owolabi *et al*¹⁶ who investigated assessment of clinical teaching. This may be due to the fact that the evaluation domain items test a more patient-based situation with relatively lower scores more likely if assessing didactic lectures. Mean global score was 74.64 ± 13.65 suggesting that the resident was a good teacher though the scores correlated only moderately (Spearman's $\rho = 0.476$, $p < 0.001$) with the aSFDPQ. Setting lower standards for aSFDPQ scores when assessing residents as teachers has been suggested¹⁶. However, a better approach would be to train resident doctors to become more effective clinical teachers both as residents and when they become consultants.

Providing feedback for residents^{7,27} as is being done in this study is one of the ways to improve their teaching effectiveness^{28,29}. Our study had limitations: the single site limits generalization while the normative Likert-type scale is susceptible to inflation and halo effects³⁰. In addition, a pre-intervention assessment ideally should have been undertaken for comparison.

Conclusion

Rheumatoid arthritis was the most enjoyed/understood lecture largely due to good explanations/illustrations (including case demonstrations) while spondyloarthropathies was the least understood due to its perceived difficulty by the students. There was a significant increase (24.6%) in the number of students who could identify rheumatic conditions as a result of the lectures. Despite this, teaching effectiveness was suboptimal overall with no significant differences by gender or year of study in the SFDPQ and aSFDPQ scores. There is an urgent need for formal pedagogic training to improve teaching effectiveness among resident doctors in Nigeria.

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