Original Article

The Perceptions and Attitudes of Medical Students towards Orthopaedic and Trauma Surgery Teaching in Makurdi, Nigeria

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Abstract

Aim: The aim of this study was to assess the perceived educational value of orthopaedic and surgery learning opportunities among medical students and to evaluate the students' motivating factors in pursuing a future career in the specialty. **Methodology:** A questionnaire was designed to assess undergraduate medical students' perception of learning environments in orthopaedic and trauma surgery, career intent and motivation towards a future career in the specialty. A 5-point Likert scale was employed. **Results:** Seventy-four students completed the questionnaire. Learning opportunities considered useful for orthopaedic and trauma surgery were bedside teaching with a consultant (n = 39, 52.7%), seeing patients in clinic (n = 36, 48.6%) and formal lectures (n = 35, 47%). Fifteen respondents (20.3%) expressed an interest in pursuing a career in the specialty, with watching or assisting open surgery being the most significant motivating factor (P = 0.001) for choice of the specialty. **Conclusion:** Bedside teaching with a consultant and seeing patients in outpatient clinics were found to be the most useful learning environments. A fifth of the respondents indicated an interest in a future orthopaedic and trauma surgery career, with watching or assisting open surgery being the most statistically significant motivating factor. Students may be better served incorporating the findings in future curriculum design.

Keywords: Attitude, medical education, Nigeria, orthopaedics and trauma, undergraduate

Introduction

Disorders of the musculoskeletal system are the most common cause of severe long-term pain and physical disability.[1] They constitute some of the most common reasons for which patients seek medical aid.[2,3] In the United Kingdom, 10%–25% of general practice consultations are due to musculoskeletal problems of which back pain constitutes up to a third.[4] These conditions consume enormous health-care resources. The direct costs are only a quarter of the indirect costs, which comprise sick leave, sick pensions, early retirement and the inability to support oneself with developing countries carrying the brunt.[5]

Efficient treatment of musculoskeletal conditions is multidisciplinary and involves different medical specialties along with other health-care professionals. Undergraduate musculoskeletal education is at present insufficient in most medical schools in both basic science and clinical training.[4,6] This is evidenced by poor performance when a 25-point basic-competency examination introduced by Freedman and Bernstein was administered to interns or medical students.[5-9] This results in many frontline doctors not having adequate training and consequently lacking in competency, skills and confidence to manage musculoskeletal disorders in their daily practice; they may neither recognise conditions nor be aware of what can be achieved by appropriate care.[7]

The total duration for undergraduate education is fixed and not expandable. As such, undergraduate musculoskeletal curriculum has to compete for space among other clinical courses taught about the same time. The curriculum is taught in various learning environments and exercises such as formal lectures, small group teaching seminars, ward

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rounds, outpatient clinics and theatre sessions. Orthopaedic and trauma curriculum is taught along with other disciplines. Recent evidence shows that career intent is present early on and is either nourished or ablated by external factors during early years of training.[10] Assessing students' perception and attitudes towards learning orthopaedic and trauma surgery is vital for curriculum modification to improve competency among students and to ensure a good number of them pursue a future orthopaedic career.

This study aimed to assess the perceived educational value of various learning environments and exercises among clinical students following their orthopaedic and trauma surgery rotation. It also evaluated the students' desire in pursuing a future career in the specialty.

Methodology

This was a cross-sectional study. A five-point Likert scale[11] was utilised to elicit students' responses to the perceived value of learning environments. Content validity was assessed using the results of earlier studies.[10,12] A questionnaire was designed, and students were asked to rate their attitude towards various learning environments and exercises encountered during their orthopaedic and trauma postings. The survey instrument also comprised a question on whether students were interested in pursuing a career in orthopaedic and trauma surgery and to rank the factors which motivated them towards this specialty as a career choice.

A sample size of 74 was obtained using a Raosoft sample size calculator,[13] providing a confidence level of 95% and a margin of error of 5%. Clinical medical students who had completed their orthopaedic and trauma postings were asked to complete the survey. Students' anonymity was maintained, and questionnaires were not part of any institutional evaluation. Students were not offered incentives to participate, and participation was not mandatory. The survey was carried out in such a manner to avoid interference with academic coursework. Ethical clearance was obtained from the university hospital Health Research and Ethics Committee.

Data were analysed using the software IBM SPSS Statistics for Windows, version 21.0 (Armonk, NY, USA: IBM Corp). Descriptive statistics were employed to display single-variable quantities using means and standard deviations for continuous variables or proportions for categorical variables unless otherwise stated. Students' interest in the specialty was measured as either 'interested' or 'not interested', and analyses compared the difference between these groups. The Mann–Whitney *U*-test was used to measure factors that influenced students' interest in pursuing a career in orthopaedics and trauma. The level of significance level was 0.05.

Results

Seventy-four students completed the questionnaire giving a response rate of 81.3%. Learning environments considered to be useful for this subject were bedside teaching with a consultant (n = 39, 52.7%), seeing patients in clinic (n = 36, 48.6%), formal lectures (n = 35, 47.3%), small group teaching seminar (n = 34, 45.9%) and seeing patients on the ward (n = 30, 40.5). In assessing the educational benefit of attending trauma meetings, 28 students (37.8%) did not find attending useful compared to 15 (20.3%) who did. Table 1 shows the students' assessment of the educational value for each learning environment. Fifteen respondents (20.3%) expressed their interest in pursuing a career in orthopaedic and trauma surgery. The motivating factors for developing a specialist career interest were quality of teaching during placement (n = 26, 35.1%), subject matter (n = 25, 33.8%) and watching or assisting open surgery (n = 21, 28.4%). Watching or assisting open surgery (U = 212, P = 0.001) and quality of teaching (U = 285, P = 0.03) were significantly associated with the specialty interest (Mann–Whitney test). Table 2 demonstrates the distribution of students' motivating factors towards a career in orthopaedic and trauma surgery.

Discussion

The World Health Organization designated 2000–2010 as the 'Bone and Joint Decade' to reflect the importance of musculoskeletal conditions in global health-care delivery.[14] Undergraduate musculoskeletal education has come into focus due to its inadequacy. Improving undergraduate musculoskeletal curriculum will help provide competent frontline doctors to cater for the enormous health-care challenges posed by these conditions. Since the quality of education received may have an influence on the eventual choice of career, it is equally important to provide high-quality musculoskeletal education in order to attract the best students to orthopaedic and trauma surgery.[15] This study aimed to assess the perceived educational value of various learning environments and exercises in orthopaedic and trauma surgery among clinical undergraduate medical students who had completed their rotations through the specialty. It also investigated a possible choice of orthopaedic and trauma surgery as a career and motivating factors that may lead to such.

The study showed that consultant-led bedside teachings followed by interaction with patients in the clinic were perceived to be the most beneficial learning environments. This finding was similar to that of a study done in the United Kingdom.[10] Learning environments which ensure direct contact with patients seem to be more likely to be perceived valuable learning environments. When such interactions are mediated by faculty staff, they seem to be more useful to students as exemplified by the finding that consultant-led bedside teaching was perceived to be the preferred learning environment by the majority of the students. It will be important to leverage on this factor to ensure full participation of students in clinical activities and provide more focused teaching during consultant-led ward rounds.

A fifth of the respondents indicated an interest in a future orthopaedic and trauma surgery career, a figure close to that

Table 1: Students' assessment of the educational value of learning environments

Learning environment	Likert scale (%)				
	1	2	3	4	5
Seeing patients in clinic	10 (13.5)	13 (17.6)	6 (8.1)	36 (48.6)	9 (12.2)
Seeing patients on the ward	10 (13.5)	13 (17.6)	10 (13.5)	30 (40.5)	11 (14.9)
Bedside teaching with SR/Reg/HO*	7 (9.5)	10 (13.5)	14 (18.9)	28 (37.8)	15 (20.3)
Bedside teaching with consultant	4 (5.4)	14 (18.9)	6 (8.1)	39 (52.7)	11 (14.9)
Watching/assisting open surgery	9 (12.2)	12 (16.2)	13 (17.6)	29 (19.2)	11 (14.9)
Trauma meeting	8 (10.8)	28 (37.8)	14 (18.9)	15 (20.3)	9 (12.2)
Small group teaching seminar	6 (8.1)	14 (18.9)	8 (10.8)	34 (45.9)	12 (16.2)
Formal lectures	7 (9.5)	11 (14.9)	8 (10.8)	35 (47.3)	13 (17.6)
Independent reading	9 (12.2)	11 (14.9)	19 (25.7)	25 (33.8)	10 (13.5)

*SR: Senior registrar, Reg: Registrar, HO: House officer. Question 1: How useful do you find each learning environment for orthopaedic and trauma surgery? (1: Extremely useless, 5: Extremely useful)

Table 2: Motivating factors towards a career in orthopaedic and trauma surgery

Total=74	1	2)	3	4	5	*P*-value Mann-Whitney
Interested in O &T career = 15						
Not interested in O &T career = 59						
Seeing patients in in clinic/ ward/A&E	15 (20.3%)	29 (39.2%)	17 (23.0%)	7 (9.5%)	6 (8.1%)	
Interested in O&T career	2 (13.3%)	5 (33.3%)	1 (6.7%)	3 (20%)	4 (26.7%)	0.05
Not interested in O&T career	13 (22.0%)	24 (40.8%)	16 (27.1%)	4 (6.8%)	2 (3.4%)	
Quality of teaching received	4 (5.4%)	9 (12.2%)	12 (16.2%)	26 (35.1%)	26 (35.1%)	
Interested in O&T career	0 (0%)	1 (6.7%)	0 (0%)	7 (46.7%)	7 (46.7%)	0.03
Not interested in O&T career	4 (6.8%)	8 (13.6%)	12 (20.3%)	19 (32.2%)	16 (27.1%)	
Watching/assisting O&T surgery	19 (25.7%)	13 (17.6%)	12 (16.2%)	21 (28.4%)	9 (12.2%)	
Interested in O&T career	1 (6.7%)	1 (6.7%)	2 (13.3%)	6 (40%)	5 (33.3%)	0.001
Not interested in O&T career	18 (30.5%)	22 (37.3%)	10 (16.9%)	15 (25.4%)	4 (6.8%)	
Subject matter	9 (12.2%)	18 (24.3%)	11 (14.9%)	25 (33.8%)	11 (14.9%)	
Interested in O&T career career	2 (13.3%)	7 (46.7%)	1 (6.7%)	4 (26.7%)	1 (6.7%)	0.10
Not interested in O&T career	7 (11.9%)	11 (18.6%)	10 (16.9%)	21 (35.6%)	10 (16.9%)	
O & T lifestyle	9 (12.2%)	32 (43.2%)	8 (10.8%)	18 (24.3%)	7 (9.5%)	
Interested in O&T career	0 (0%)	8 (53.3%)	0 (0%)	5 (33.3%)	2 (13.3%)	0.28
Not interested in O&T career	9 (15.3%)	24 (40.7%)	8 (13.6%)	13 (22.0%)	5 (8.5%)	
O &T role model	14 (18.9%)	20 (27.0%)	17 (23.0%)	16 (21.6%)	7 (9.5%)	
Interested in O&T career	1 (6.7%)	2 (13.3%)	7 (46.7%)	4 (26.7%)	1 (6.7%)	0.15
Not interested in O&T career	13 (22.0%)	13 (30.5%)	10 (16.9%)	12 (20.3%)	6 (10.2%)	

%: Percentage response to each question, O & T: orthopaedics and trauma surgery. Question 2: Which of the following makes you interested in orthopaedics and trauma surgery as a possible career choice? (1 Extremely not interested – 5 Extremely interested)

reported by Boutefnouchet and Budair.[10] An early career choice for the speciality has been noted to be highly predictive of eventual career destination.[16] A prior study has shown that watching or assisting in open surgery was statistically significant in the choice of orthopaedics and trauma as a possible future career, which is congruent with our results.[12] Leveraging on factors that motivated the career choice may aid in ensuring that aspiring students maintain their interest after graduation.

It has been suggested that the amount of exposure to a medical specialty correlates with the application rates of that specialty.[17] A study showed that a nearly fivefold increase was recorded in the number of medical students considering a surgical career based on their clinical rotation experience, much of which was attributable to operating room exposure along with resident and faculty interaction.[18]

The place of role models as an important factor in the choice of a future career in medical specialties was not statistically proven in this study. This may be because of the absence of a formal mentorship programme for medical students in the study centre. Increasing interaction between specialists and students facilitates learning through constructive feedback and career counselling.[19] A study demonstrated that students who undertook surgery-related research and developed mentor relationships early on in medical school were significantly

more likely to maintain an interest in surgical specialties later in their training.[20] Developing a mentorship initiative in the study centre may aid orthopaedic surgeons who generate and maintain interest in the specialty among intending students.

Trauma meetings and watching/assisting open surgery were noted to be areas of missed educational opportunities, a finding that is in consonance with other studies.[10,12] Trauma meetings are mostly part of postgraduate medical training curriculum in the study centre. This may inadvertently exclude full participation of medical students as they are not the primary focus of attention. Possible limited engagement of medical students in the theatres due to service pressure may be a likely explanation for the relatively poor perception of the operating theatre as a learning environment for orthopaedic and trauma surgery. While further studies may be needed to elucidate the exact determinants of the fairly poor ratings of these learning environments, conscious efforts ought to be made to ensure students are engaged and carried along in these exercises.

Conclusion

Bedside teaching with a consultant and seeing patients in outpatient clinics were found to be the most useful learning environments for studying orthopaedic and trauma surgery in Makurdi. A fifth of the respondents indicated an interest in a future career in the specialty, with watching or assisting open surgery being the most statistically significant motivating factor. It is recommended that these results be considered in future curriculum design to improve content delivery as well as to attract the best students to orthopaedic and trauma surgery.

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Conflicts of interest

There are no conflicts of interest.

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