Journal for Re Attach Therapy and Developmental Diversities
eISSN: 2589-7799
2022 April; 5 (1): 343-347

Impact Of Accreditation On The Surgical Competence And Training Of Orthopedic And Traumatology Residents: A Comparative Study

Dr. Buchupalli Bharath Reddy[1*], D Jothieswari[2], S. Ooha[3]

[1*]Associate Professor, Deportment of Orthopeadics, Konaseema Institute of Medical Sciences & Research Foundation, Amalapuram, Andhra Pradesh, India
[2&3] Sri Venkateswara College of Pharmacy, RVS Nagar, Chittoor-517127, Andhra Pradesh, India.

ABSTRACT

To check if orthopedic and traumatology residents master surgical skills by the conclusion of their specialization and to see if residents at accredited centers respond differently from those at nonaccredited centers. A group of 131 residents from nine institutions based in Istanbul took part in the survey given during their training in the morning. Apart from gathering their demographic details, level of seniority, knowledge of technical instruments, and academic and practical training, the survey also looked into what types of operations they would be confident in managing after training. There were 46 types of surgery included in the questionnaire, covering trauma, arthroscopy, arthroplasty, spine surgery, pediatric orthopedics, hand surgery, deformity correction, and surgeries for bone and soft tissue tumors. The analysis of the data involved descriptive statistics, one-way ANOVA, Tukey's post hoc test, and chi-square tests. A result was considered statistically significant if $p < 0.05$. Fifty-three respondents (40.5%) chose centers with accreditation, while 78 (59.5%) were from those without accreditation. Those who attended accredited institutions showed stronger habits of participating in case presentations, writing workshops, and regional meetings than did participants who did not attend accredited institutions ($p < 0.05$). Moreover, they gained more value from having textbooks and electronic resources for studying theory ($p < 0.05$). When looking at the 46 surgical procedures, 17 of them revealed clear differences between the accredited and nonaccredited groups, all being statistically significant ($p < 0.05$). The study group's interest in different types of surgery varied ($p < 0.05$), with employees most interested in trauma, arthroplasty, deformity, and arthroscopy, and least interested in surgeries of the spine and tumors. Training level was strongly associated with the surgical competency assessed by residents ($p = 0.02$). It has been suggested that measures be taken to help orthopedic residents increase their skills in surgery. Accreditation is very important in ensuring all training is done to the same standard and at a higher level. More work must be done to expand the number of approved training centers for orthopedic surgery to achieve uniform standards and excellence.

KEYWORDS: Residency, Medical education, Orthopedic surgical procedures, Accreditation, Survey

INTRODUCTION

An expert in any area must be technically skilled as well as follow ethical guidelines to do their job well (1). TOTEK members perform visitations to applicant hospitals seeking accreditation for the Orthopedics and Traumatology Specialization program. The quality of the education and its content in the clinics are checked to confirm that they comply with TOTEK's rules. Accreditation is given to clinics that follow these rules, making sure their training programs are top-notch. If a clinic is found to be below the required level, advice is given to help them improve their educational offerings, with another review being done after time. Accreditation for five years is valid and regulated by the standards established by the Medical Association-Coordination Committee for the Associations of Specialization (TTB-UDEK) (2). Our study aimed to measure the level of competence needed in residents for performing surgical procedures, to understand their views on various interventional practices in orthopedics, and to find out if differences exist in this regard between residents from accredited and nonaccredited institutions. In studying the opinions of orthopedic surgery residents in training and describing the current situation, we hope this paper will assist in designing and improving educational strategies and guidelines.

MATERIALS AND METHODS

To conduct the research, a special questionnaire was developed and a descriptive study was organized and carried out in the Istanbul province. Before starting the research, the Hospital Ethics Committee and Medical Specialization Board gave their approval. In 2017, I was doing this research and found that of 856 orthopedics and traumatology residents nationwide, 250 practiced in Istanbul. TOTEK recognized only two institutions in Istanbul with accreditation. The scientists used a 10% margin of error and a 98% confidence interval to find that the sample size for Istanbul should be 89 and for Turkey should be 117. Of the nine institutions that agreed to take part, 131 orthopedics and traumatology

residents participated in the study. On the list, there were two hospitals that held TOTEK accreditation. The questionnaire was conducted in person with all the residents. All the participants were undergoing specialized training during the period when data were collected. In addition to collecting basic data such as age, degree, knowledge of medical equipment, and their training, we wanted residents' opinions on during which surgeries they could be in charge, including the procedure itself, patient care, and challenges or issues occurring after. It contained 46 questions that were meant for tracking surgical procedures grouped as trauma, arthroscopy, arthroplasty, spine surgery, pediatric orthopedics, hand surgery, deformity correction, bone and soft tissue tumors, and foot–ankle surgery.

STATISTICAL ANALYSIS

Data analysis also used analysis of variance (ANOVA), Tukey's comparison test, as well as chi-square statistical tests. A result was considered statistically significant when p was less than 0.05. The entire process involved coding data and running the calculations using IBM SPSS Statistics software, version 22.0.

RESULTS

Table 1.Questionnaire Results and Residents' Responses

Resident Information	Number	Ratio (%)
Year of Seniority		
First-year resident	30	22.9
Second-year resident	22	16.8
Third-year resident	25	19.1
Fourth-year resident	32	24.4
Fifth-year resident	22	16.8
Total	131	100
Accreditation Status		
Number of residents from accredited institutions	58	44.3
Number of residents from nonaccredited institutions	73	55.7

Table 2.Questionnaire Results and Residents' Responses

Questionnaire Results, Residents' Opinions Questions	Total (YES) n (%)	Residents from nonaccredited institutions (YES) n (%)	Residents from accredited institutions (YES) n (%)	p
Source of theoretical knowledge				
Senior Resident	90 (68.7)	53 (72.6)	37 (63.8)	0.35
Specialized Physician/Research Assistant	55 (41.9)	30 (41.1)	25 (43.1)	0.82
Chief Resident or Doctor Academic Member	28 (21.4)	19 (26.0)	9 (15.5)	0.19
Lecturer/Academic Member/Professor/Associate Professor	40 (30.5)	24 (32.9)	16 (27.6)	0.55
Books	70 (53.4)	34 (46.6)	36 (62.1)	0.04
Electronic media	65 (49.6)	31 (42.5)	34 (58.6)	0.05
Seminars/Congresses	38 (29.0)	22 (30.1)	16 (27.6)	0.76
Observers and assistants during surgical procedures				
Senior resident	95 (72.5)	56 (76.7)	39 (67.2)	0.27
Specialized Physician/Research Assistant	118 (90.1)	69 (94.5)	49 (84.5)	0.06
Chief Resident or Doctor Academic Member	58 (44.3)	36 (49.3)	22 (37.9)	0.21
Lecturer/Academic Member/Professor/Associate Professor	54 (41.2)	31 (42.5)	23 (39.7)	0.76
Regularly held training activities				
Article-Writing Sessions	78 (59.5)	37 (50.7)	41 (70.7)	0.01
Seminars	56 (42.7)	30 (41.1)	26 (44.8)	0.67
Case Presentations	58 (44.3)	24 (32.9)	34 (58.6)	0.00
Training Visits	80 (61.1)	52 (71.2)	28 (48.3)	0.02
Resident Classes	60 (45.8)	29 (39.7)	31 (53.4)	0.15
Periodic In-Province Meetings	45 (34.4)	16 (21.9)	29 (50.0)	0.00
Evaluation of the specialization				
Exhausting	128	77 (99.0)	51 (87.9)	0.02

	(97.7)			
Stressful	117 (89.3)	69 (88.4)	48 (82.8)	0.35
Teaching	58 (44.3)	31 (39.7)	27 (46.6)	0.48
Improving	63 (48.1)	36 (46.6)	27 (46.6)	0.99
Beneficial	50 (38.2)	24 (32.9)	26 (44.8)	0.20
Pleasing	26 (19.8)	13 (17.8)	13 (22.4)	0.59

Figure 1:Residents' Survey Demographics (N=131)

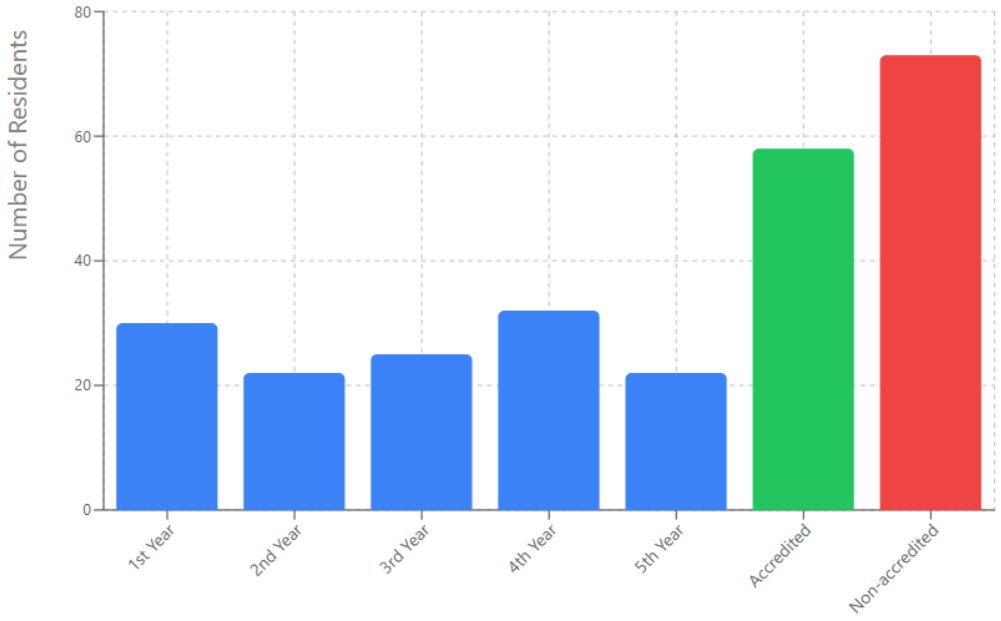
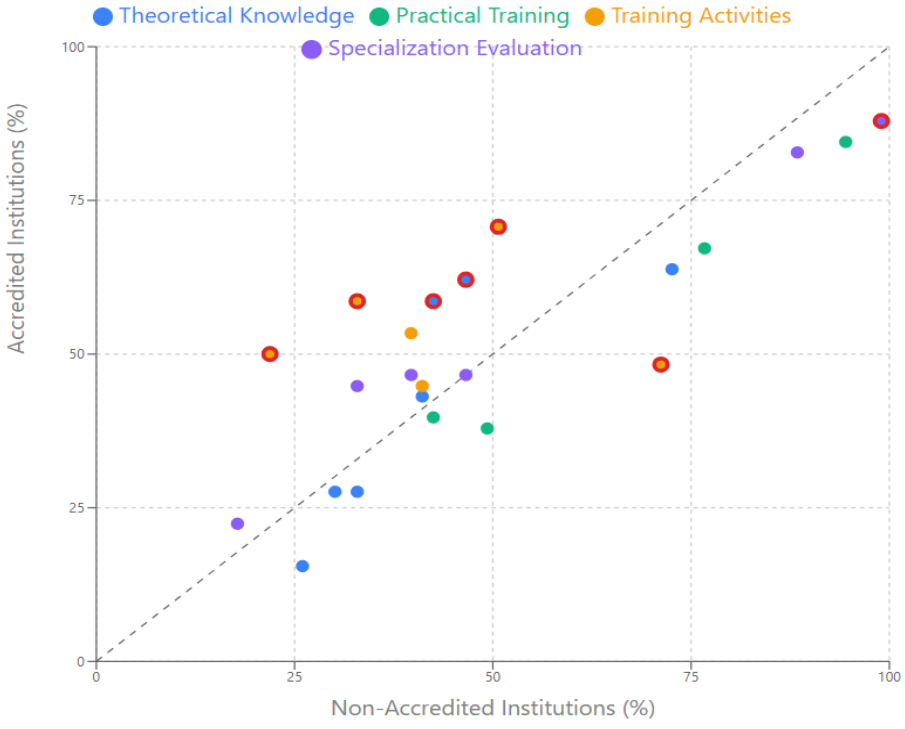


Figure 2: Institution Comparison: Non-Accredited vs Accredited Response Rates



The results from the questionnaire give useful information about the experiences and opinions of orthopedics and traumatology residents related to their training and specialty. The following table provides details on resident information by year of training and whether they are accredited. The fourth-year residents made up the biggest group at 24.4%, with first-year residents right behind at 22.9%. Bank workers with employment were found to have attended accredited schools for 44.3% of them and nonaccredited schools for 55.7% of them. Table 2 shows specific details about the residents' knowledge, the types of surgery they assist with, their training activities, and their opinions on their chosen specialty. Most respondents (68.7%) said that they trusted senior residents for theories, though there were more variations between accredited (63.8%) and nonaccredited (72.6%) schools, where respondents from the latter relied on senior residents more. Findings showed that having access to books and electronic media was crucial, and was more common among those in officially accredited institutions. The table also outlines the different kinds of activities that take place on a regular basis. More residents from accredited institutions took part in article-writing and case presentations, while they were also more likely to attend periodic in-province meetings, with all these differences proven to be significant (p less than 0.05 for case presentation and p less than 0.01 for regular meetings). In addition, residents in accredited institutions were less stressed by their training than those in nonaccredited institutions ($p = 0.02$). As a result, the findings confirm that accredited hospitals can provide better training and access to resources for their residents .

DISCUSSION

Apart from learning the theory, managing patients before and after operations, regularly involving oneself in surgery, and aiming to improve surgical skills are all important training tasks during this specialization. A lack of skill on the part of the orthopedic and traumatology specialist can result in poor care for patients. Likewise, doctors with a lot of surgical experience can give others in the field confidence through their professional abilities and achievements. In the United States and Europe, accreditation follows different sets of rules. Many US schools are required to be accredited, while in Europe and here, it is still a matter of choice. To become involved in accreditation, educational institutions must first apply to the required bodies. During this step, the authorities check on the educational plans, organizational structure, printed materials, number of patient visits, hospital stays, surgeries, treatments, and emergency services for the year. The stability in the process is also made possible by having external independent organizations handle accreditation. It was found in this study that all the accredited institutions in Istanbul hosted case presentations, writing sessions, and monthly resident evening meetings more often than other types of institutions. Moreover, accredited institutions had more books and electronic resources, which aided the learning of the residents regarding theoretical matters. Significant differences ($p<0.05$) between surgical types were found in the evaluations of the residents on the types of surgeries they expected to conduct after specializing. Those residents from accredited institutions had more confidence in operating on cases related to arthroplasty, deformity, arthroscopy, hand surgery, and pediatric orthopedics. Residents from nonaccredited schools instead were more certain in performing trauma surgery. While having accreditation is useful, it can also bring about issues, like the requirement for consistent updates and modifications (3). Looking at how residents rate their own surgical proficiency based on their training year, notable differences were seen, mainly between first-year and fifth-year residents ($p=0.01$). DFIGURE1 There was a surprising trend where second-year residents had the highest self-confidence, while the lowest was found in third-year residents. Self-confidence in surgical procedures was found to be greater among people in training and in the first and second year of training, and was connected to their satisfaction (4). Most residents in our analysis felt they could successfully perform trauma surgeries the most, and the following procedures were arthroplasty, deformity, arthroscopy, pediatric orthopedics, hand surgery, spine surgery, and tumor surgery. Surgical areas were found to greatly affect surgery residents'self-rated abilities ($p=0.00$). It is important to highlight that not all fifth-year residents felt able to treat pelvic fracture with an external fixator, a key procedure in emergency circumstances. Hence, more attention to emergency procedures should be included in the training process for trainers. Additionally, having structured surgical training after residency programs could help residents become better surgeons during emergencies related to orthopedic cases. Around one-quarter of residents (23.7%) use simulation-based exercises, and nearly 20% use dead body training, both of which successfully help with surgical training. The study by Chaer et al. found that simulation-based training improves skills in the OR, and several other studies also confirm it for orthopedics (7, 8) Moreover, having opportunities to practice in a lab helps residents improve their surgical skills using plastic models, simulators, and real bodies. Hand surgery is a subfield in our country that requires orthopedic, plastic surgery, and general surgery specialists to undergo training to become hand surgery specialists. The majority of respondents in our study felt that they did not have the skills to do more than tendon repair in their hands. As a result, residents could then build their competence in doing such surgeries if hand surgery rotations were included in their learning. Studies have suggested that using both internet learning and working on real bodies can help tell apart the abilities of junior and senior residents in carpal tunnel surgery (9). Putting more emphasis on skills might be better than just ensuring surgeons perform a certain number of procedures. Our researches show that it is necessary for trainers to improve training in deformity,

tumor surgery, pediatric orthopedics, and spine surgery. Recording the details of interventions gives an overview of student progress and helps spot any needed improvements. Out of the participants, 79.4% stated they had report cards and 72.5% considered their clinics to be part of a training program. It is important for program managers and trainers to check these competencies according to how experienced each person is and help them further until all skills are approved. It was found that most of the participants felt exhausted and stressed during the training. It has also been shown in other specialties that surgical training can be extremely demanding (11). Even with the difficulties, surgeons still learn from a master to apprentice relationship, and the environment tends to combine collaboration with clear chain of command (12). The main way teaching is done is the "master-apprentice" method, where specialized doctors and senior residents have a key role. All in all, it is important for trainers to help residents develop their skills in orthopedic surgery. Accreditation is vital for keeping standards high and making sure clinics provide good quality training, which is why we need to work towards getting more clinics accredited.

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