# The Gap between Surgical Resident and Faculty Surgeons Concerning Operating Theatre Teaching: Report from Addis Ababa, Ethiopia.

**A. Bekele, B. Kotisso S. Shiferaw. N. Seyoum.**
Department of Surgery.Addis Ababa University, School of Medicine,
***Correspondence to:*** Abebe Bekele, Email: abebesurg@yahoo.com

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***Background:*** ***In a continent like Africa where the number of surgeons is alarmingly few, training of a large number of residents is the way forward. However, sudden expansion in the number of trainees in an existing teaching environment may bring the quality of the most fundamental education i.e. operation room teaching into question.***
***Method:*** ***We wanted to investigate the different perceptions of our surgeons-under-training and faculty concerning preoperative preparation, intra operative teaching and postoperative feedback. A validated questionnaire was administered to our surgical residents and faculty at the Addis Ababa University, School of Medicine, Department of Surgery. Results were analyzed with 2-sample t tests, comparing Likert scores. Findings were significant if the p value was < 0.05.***
***Results:*** ***Forty residents (15 second year, 15 third years and 10 final years) and 30 faculty members completed the survey. With respect to preoperative preparation, faculty were significantly more likely to claim that residents' preparation in terms of reading is low (3.77 vs 2.45; p=0.001) and anatomy review (3.73 vs 2.34; p=0.001) before the procedure. There was a very significant difference with regards to intra-operative teaching activities, i.e teaching of the operative steps (2.60 vs 3.79; p=0.048), instrument handling (2.30 vs 3.72; p=0.002), and surgical technique (2.23 vs 3.83; p= 0.001). Residents' perception of the effort of the faculty to act as a teacher in the operating room was significantly lower compared to the faculty (2.13 vs 3.94; p=0.002). Postoperatively, significant differences were found in perceptions of positive feedback (2.48 vs 3.86; p=0.01) and feedback on areas to improve (1.85 vs 3.34; p=0.001).***
***Conclusion:*** ***There is a universal agreement on the need to improve the current residency training. However, the difference between resident and faculty in the teaching-learning process is alarmingly significant. As there is no substitute for the intra-operative training of residents, every effort must be made to not to trade off number of graduates with quality and competence of surgeons-under-training.***

**Keywords:** Resident, Surgeons, Operating, Theatre, Teaching

## Introduction

Many documents and reports indicate that countries in Africa and other developing countries suffer from extreme shortage of health professionals, particularly in the practice of surgery. To make things worse, Africa exhibits increasing number of road traffic accidents, domestic and war fare violence and there is also a huge number of unattended surgical disorders unique to the continent (1,2). One strategy of improving such a state is to increase the number of locally trained surgeons in the already existing teaching facilities i.e. increasing enrollment of surgical residents. However, as the number of residents significantly increases in a center, it is natural to assume the operating hours dedicated to each resident to decrease, attention and follow up provided by the faculty to be more sparse, direct contact between trainee and trainer to be light and duty hours to be significantly lower.

It is quite obvious that for surgeons, the most direct educational experiences take place in the operating theatre. It is reported that surgical residents will spend more than 10,000 hours, over half of their clinical training experience, in the operating room acquiring crucial knowledge and essential skill sets [3,4]. Hence the issue of proper intra-operative teaching is not overemphasized. In his article on teaching technical skills, Reznick proposed several adult learning-based surgical teaching approaches to enhance resident training [6]. First, as adults, residents are self-directed individuals who learn best by solving problems and immediately applying acquired skills. Moreover, residents come to

a surgical rotation with a foundation of prior learning and life experiences that must be recognized and utilized. Surgical educators should therefore encourage residents to articulate their learning goals and align these with expectations of the rotation. Adult learners seek feedback on their performance; thus, attendings must emphasize the process of giving feedback in a positive and constructive manner. Finally, attendings should identify core surgical principles and concepts so that residents can transfer new learning to future operative experiences [6]. The department of surgery at the Addis Ababa University, school of medicine has started enrolling increased number of general surgery residents since the past few years and in 2011, the number of residents has tripled from the intake in 2009. The goal of study was to understand how operation theatre teaching techniques, based on Reznick's adult education principles were applied and received. Our hypothesis is that the faculty and residents have significantly perception differences on the teaching-learning process taking place in the operating theatres.

## Methods

The study was a cross sectional survey, conducted at the department of surgery, school of Medicine at the Addis Ababa University. The department has a well established residency program for the past 35 years, and the training is for 4 years. Forty General surgery residents in their 2nd, 3rd, and 4th year of residency program who were considered to be well acquainted to the operation theatre teaching were enrolled in the study. The distribution includes 15 year 2 residents, 15 year 3 residents, and 10 year 4 residents. Year 1 residents were excluded from the study because they commenced their training few months before the study period and it was assumed that they were not well accustomed to the routine teaching process. Thirty (out of 35) faculty surgeons who filled and returned the questionnaire were included in the study. Two survey formats were created consisting of similar questions with responses on a 5-point Likart scale (1: strongly disagree to 5: strongly agree), the structure and content of each survey was specific to either residents or faculty. The participants were asked to judge their responses based on general recall and not after a particular procedure or a specific time period. The responses of the two groups for each question were averaged and compared using independent t-test and one way ANOVA test. Statistical significance was set at p=0.05.

## Results

Forty residents and 30 faculty members completed the survey. Because the number of residents in our study was small, we did not have the power to analyze and detect significant differences between the junior level and senior level residents. Of our 30 general surgery faculty members, 24 were assistant professors, 5 associate professors, and 1 was a full professor. Given these modest numbers, we did not analyze differences in faculty rank in our survey. The results are summarized in Table 1, where the data for each question are presented as the mean response for each group $\pm$ standard deviation. Both residents and faculty surgeons agreed that there was a need to improve intra-operative education (p=0.173).

Concerning residents' perceptions of their preoperative preparation, there were significant differences from those of the faculty surgeons. Whereas the residents believed they conducted adequate preoperative reading about procedures ($p < 0.05$) and reviewed pertinent anatomy ($p < 0.05$), this was not apparent to the faculty. Residents also felt that they hardly conduct preoperative discussion with the operating surgeon concerning the case ($P<0.05$). Residents were significantly more likely to score less compared to faculty on all five of the intra-operative teaching questions, including being given feedback on steps of the procedure ($p < 0.05$), being asked relevant questions during the procedure ($p < 0.005$), operating surgeon demonstrating pertinent anatomy ($p < 0.05$), receiving feedback on instrument handling ($p < 0.005$), and receiving feedback on their surgical techniques ($p < 0.05$).

Resident perceptions of the effort that faculty made to act as a teacher in the operating room was also significantly lower compared to the faculty ($p < 0.007$). Postoperatively, it was the perception of the

residents that both positive feedback ($p < 0.05$) and feedback on areas to improve ($p < 0.05$) was inadequate.

**Table 1.** Perception of Faculty Surgeons and Residents under Training Concerning Operation Theatre Teaching at the Addis Ababa University, Department of Surgery: 2011.

| Questions | Staff | Resident | Significance* |
|---|---|---|---|
| 1. Need to improve intra-operative education | 4.23 ± 1.47 | 4.77 ± 0.42 | 0.17 |
| 2 .Preoperative reading about the procedure | 2.45 ± 0.87 | 3.77 ± 0.91 | < 0.05 |
| 3. Preoperative anatomy review | 2.34 ± 0.90 | 3.73 ± 1.01 | < 0.05 |
| 4. Preoperative discussion with senior | 3.83 ± 0.80 | 2.70 ± 1.43 | < 0.05 |
| 5. Feedback on steps of procedure | 3.79 ± 0.77 | 2.60 ± 1.17 | < 0.05 |
| 6. Asked pertinent questions during case | 4.00 ± 0.65 | 2.48 ± 1.01 | < 0.05 |
| 7. Senior demonstrates pertinent anatomy | 3.59 ±0.91 | 2.48 ± 1.01 | < 0.05 |
| 8. Intra-operative feedback on instrument handling | 3.72 ± 0.84 | 2.30 ± 1.02 | < 0.05 |
| 9. Intra-operative feedback on surgical technique | 3.83 ± 0.60 | 2.23 ± 1.01 | < 0.05 |
| 10. Post-operative positive feedback | 3.86 ± 0.84 | 2.48 ± 1.09 | < 0.05 |
| 11. Postoperative feedback on areas to improve | 3.34 ± 0.72 | 1.85 ± 0.83 | < 0.05 |
| 12. Effort of faculty to act as a teacher | 3.94 ± 0.75 | 2.13 ± 0.93 | < 0.05 |

***Statistically significant along the independent t-test and one way ANOVA test***

## Discussion

Surgery is unique from many other fields of medicine in that the physical craft is to be developed hand-in-hand with cognitive growth; yet the process of intra-operative teaching has not been regimented and is thus far poorly understood[3]. The trainee should know about the case to be operated and should read on operative management of the case preoperatively. In this study the perception of the instructors was that the residents, most of the time, have not read on the operative management of their cases although the resident's claim is to the contrary. Experience has shown that it is much easier for the one who came prepared to follow and learn the intra-operative step than for the one who is not. Therefore, all instructors should urge their residents to come well prepared on the case. Regular preoperative discussion on the case and its operative management could be the means for achieving this goal. However, there is still significant difference in response to the issue of preoperative discussion between the Staff and the residents which is a also reported by other investigators elsewhere[3, 4, 5].

In addition, the residents did not concur with most of the faculty who claim that they ask pertinent questions during a procedure, demonstrate the relevant anatomy and explain the steps of the procedure while operating. These disparities are also in line with other authors[3, 4,5]. We strongly feel that these are important components of intra-operative teaching process and should be carried out appropriately by the staff. The response on the issue of giving feedback on instrument handling and surgical technique of the trainee also ended up in significant difference which is a similar finding with other studies[4]. The importance of this cannot be underestimated. The post operative feed back to the resident who performed a procedure under one's assistance, be it positive or on areas to improve is vital in skill learning and developing confidence. The study shows statistically significant disparity in the responses given on these areas between the staff and residents. This is also true for other studies as well[5].

Most researchers addressing the issue of effective teaching support the use of student ratings of faculty teaching for the purposes of formative feedback, faculty development, and instructional improvement[7]. We agree with this concept and emphasis should be given to the comments made by the residents. Creating a supportive learning climate by being respectful to patients and learners, remaining calm and courteous, providing feedback without belittling, and showing interest in teaching are considered particularly important to the residents[8]. These important behaviors of a good teacher should be born in the faculty who aspires for effective teaching in the operation theatre.

In conclusion, this study has shown that there is significant disparity in the perception of intra-operative teaching between the staff and the residents. This may be indicative that the residents may not be acquiring the necessary skill they ought to have that enables them to take responsibility on their own when they are assigned to offer surgical care independently. Hence the staff and residents should play their part to narrow the gap and make sure that the intra-operative learning is not compromised. We recommend that a more detailed study is carried to clearly point out the specific defective areas and improve the intra-operative teaching-learning process.

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