

## Residents as Teachers: Medical Students Evaluations of Psychiatry Residents' Teaching

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### Abstract:

**Objective:** Medical students' evaluations of residents' teaching knowledge, skills, values, and attitudes are key indicators of improvement in residents' performance as teachers. Third-year medical students evaluated residents' teaching knowledge, skills, and values, before and at the midpoint of a Residents as Teachers Performance Improvement (RAT PI) education program, in order to assess the RAT PI program's ability to improve residents' teaching.

**Methods:** A baseline student evaluation of residents' teaching knowledge, skills, and values/attitudes was conducted between March and June 2011 among third-year medical students (n=53). After the initial assessment, residents participated in a four-hour RAT workshop (2010 and 2011), followed by a six-session series of educational seminars on community education (2011) and a six-session seminar series focusing on instructional methods (2012). To determine the effectiveness of the RAT PI program and to assess the residents' teaching, a follow up evaluation was conducted between February and June 2013 among third-year medical students (n=60). T-tests and chi-square analyses were used to determine if there was any significant difference in resident teaching performances before and after the RAT PI program.

**Results:** We identified a significant improvement in students' evaluations of the residents' organization in didactics and lectures, and facilitation of their learning ( $p < 0.005$ ). Midpoint students' evaluations also showed that the residents' encouragement for student participation significantly improved after the RAT PI program ( $p < 0.005$ ).

**Conclusions:** Medical students' evaluations support the importance of RAT PI programs in several areas. Teaching residents about educational design and methods may require more focused education and ongoing supervision.

**Keywords:** Teaching by Psychiatric residents, Medical Students: Evaluation, Clerkship

### 1. INTRODUCTION

In most clinical settings, students have more contact hours with residents than they do with attending physicians; they view residents as prime sources of information and regard them as teachers more than faculty members [1-3]. Students have reported that residents supported up to one-third of their education. They consider residents to be the prime educators on the wards. Residents have estimated that they spent around 25% of their time in teaching, depending on their schedule and training; they view teaching students as one of their responsibilities [4-6].

With the development of the Residents as Teachers (RAT) curriculum and a strong emphasis on resident teaching by professional agencies, 55% of U.S. residency programs now provide some formal training for resident teaching [7]. Studies have documented the use of different resident teaching models, including the One-Minute Preceptor (OMP) model, the Stanford Faculty Development Program's (SFDP) clinical teaching framework, Clinical Teaching Effectiveness Form (CTEF) by Irby, and the Bringing Education and Service Together (BEST) model, in internal medicine, family medicine, and pediatrics residency

programs. The use of these programs has produced an improvement in residents' teaching skills and learning [1, 8-10]. The prime advantage of using these global forms was their reliability span when students rate their teachers' teaching skills [11]. However, there were several methodological issues due to their limited focus on the content of students' learning from their resident teachers [8]. There were also variations in the recommended duration of RAT workshops. Studies have shown effective improvement in residents' teaching skills with both the one-hour OMP workshop model and with daylong teaching courses [1, 12-13].

With several studies and randomized trials supporting the effectiveness of the RAT curriculum in enhancing residents' clinical teaching, we decided to implement a RAT PI program at our institution. Before initiation of our RAT PI project, we noted that there were limited standardized teaching models available for teaching psychiatry residents.

### **2. RESIDENTS AS TEACHER PERFORMANCE IMPROVEMENT (RAT PI) PROJECT**

In an effort to improve medical students' psychiatric education, we began a Residents As Teacher (RAT) program in June 2011. In preparation for this RAT PI project, we collected baseline data evaluating residents' teaching between March and June 2011. In preparation for the 2011-2012 Academic Year (AY), we conducted an introduction to RAT workshop for all incoming residents and all current residents who were able to attend. This introduction to RAT workshop occurred in June (AY 2012, 2013). Each AY, the RAT PI program also included a six-to-eight hour seminar addressing some aspect of education and training important to psychiatrists. Altogether, a typical intern entering the resident program in AY 2011 would attend the introduction to RAT workshop and three educational seminars before graduating. To measure the RAT PI project's outcomes, a second wave of evaluation data was collected from third-year medical students in the psychiatry clerkship, between February and June 2013.

The introduction to RAT workshop consisted of four hours dedicated to providing an overview of medical student education at the institution, a review of the psychiatric clerkship syllabus and course objectives, medical student evaluations (content areas, methods, and approaches), the

One Minute Preceptor model, and principles and methods of teaching in small group settings. The psychiatry clerkship director, Assistant Dean for Medical Education, and psychiatry faculty, facilitated the workshop.

The three six-hour RAT seminars focused on a specific area of education important to psychiatric practice. We chose community education, principles of instructional design and curriculum development, and patient and family education as the content areas. While not specifically targeting medical students, the seminar content was applicable and transferable to teaching medical students.

The goal of the community education seminar is to prepare psychiatric residents to function as community educators. The seminar introduces residents to basic educational and health promotion concepts and the role of psychiatrists as community educators, and provides residents with the opportunity to develop community educational presentation skills and to gain feedback from peers and faculty. The instructional design and curriculum development course taught fundamental concepts and required residents to develop a one-hour instructional module on some area of psychiatry that is appropriate for third-year medical students. This seminar included assigned reading, presentations, and peer feedback.

The patient and family education seminar provided information and readings on health promotions, mental health literacy, and making referrals. This seminar included role-playing, problem-based learning, the creation of a 20-minute patient education module on an assigned clinical topic, and peer feedback. In total, the RAT PI program includes a four-hour introduction to RAT workshop that is primarily focused on RAT in the clerkship and three educational seminars (one each year) on aspects of education important to psychiatry. The hope is that this approach will improve medical student education and provide psychiatrists with the training and experience to be effective educators in a variety of settings.

As an initial step in supporting RAT PI, we conducted a baseline self-assessment evaluation of psychiatry and family medicine residents. We reported that psychiatry residents in our study did not clearly understand their role as educators of both patients and medical students, compared with family medicine residents. We found that residents' attitudes varied across the institution, and suggested that each institution and training

program develop their own performance improvement process for measuring, tracking, and improving residents' teaching effectiveness. We also reported that a limitation of our resident self-assessment survey was the possible influence of over reporting or under reporting bias [14]. To overcome this limitation, in the current study, medical students' evaluations of our residents' teaching knowledge, skills, and values will help us to assess the RAT PI program from the learner's point of view, and will serve as key indicators for the improvement of residents' performance as teachers.

### 3. RAT PI SCALE DEVELOPMENT

Following a review of the psychiatric literature on the evaluation of residents as teachers and the general literature on teaching effectiveness, we adapted 15 items from the San Francisco State University (SFSU) ongoing study and assessment of teaching effectiveness for use in this study [16]. SFSU has been studying the measurement of teaching effectiveness since 1996. The University has conducted a number of ongoing qualitative and quantitative measurement and item analysis studies on teaching effectiveness. The SFSU study based their items on a thorough review of the teaching effectiveness literature, tapping the following domains: organization of course knowledge and content, clear communication with students, respectful, fair, content driven interactions with students, concern for student learning, creating a learning environment for students, timely feedback, course difficulty and workload, and overall teaching effectiveness[16]. These domains correspond closely to the University of Michigan Global Rating Scale (GRS) and the Stanford Faculty Development questionnaire (SFDP26). These robust items measure general teaching effectiveness across academic settings.

In the present study, all 15 of the original SFSU items were revised to reflect resident teaching (i.e., "Residents are enthusiastic about teaching students, residents encourage student participation, and residents provided timely feedback on my performance and progress throughout the clerkship"). To our knowledge, this is the first time that medical school teaching effectiveness has been assessed using these items. We assessed the effectiveness of the RAT PI program using third-year medical students' evaluations of knowledge, skills, and values/attitudes of residents' teaching via responses to the SFSU Likert-type instrument, before and at the mid-point of a RAT PI education program.

### 4. METHODS

We conducted a baseline student evaluation of residents' teaching knowledge, skills and values/attitudes between March and June in 2011 among third-year medical students (n=53). The medical students were between the ages of 24 and 30. The majority were males. At the time of the assessment, the students were rotating through a six-week psychiatric clerkship. The medical students received both didactic and bedside instruction from the psychiatric residents. After the initial assessment, residents participated in an initial four-hour RAT workshop (2010 and 2011). Approximately 12 first, second and third year residents participated in the workshops and provided some form of instruction to the medical students. Half of the residents were females. The workshop was followed by a six-session educational seminar on community education (2011) and a six-session seminar on instructional methods (2012). To determine the effectiveness of the RAT PI program and to assess the residents' teaching, we conducted a follow up evaluation between February and June in 2013 among third-year medical students (n=60). The study was approved by the University of Oklahoma Institutional Review Board (IRB).

Analysis was conducted with SAS 9.3 software. The 15-item instrument covered the three main areas of resident teaching, including knowledge, skills, and values/attitude. Responses were evaluated using a 5-point Likert scale: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree. Descriptive statistics were determined for the three main areas. T-tests were used to determine if there were any significant differences in resident teaching performances before and after the RAT PI program. Chi-square analysis was performed on dichotomized data; responses of "Strongly Agree" and "Agree" were collapsed, and "Neutral," "Disagree," and "Strongly Disagree" were collapsed, creating a Less-Than-Favorable response category. The alpha for the study was set at 0.05.

### 5. RESULTS

The medical students' evaluations of resident teaching revealed remarkable findings at the mid-point of the RAT curriculum. Table 1 provides the statistical analysis of medical students' responses. As previously stated, responses were categorized under the three main areas of knowledge, skill, and values/attitude of residents' teaching, before and after RAT PI program.

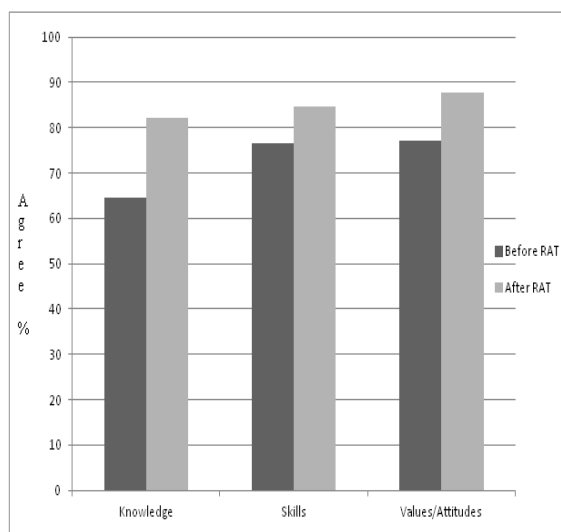
**Table1.** Students' Evaluation of Knowledge, Skills, and Values/Attitudes of Residents' Teaching, Before and After the RAT PI Program

Survey Items	Mean(Standard deviation)		Agree %	
	Before RAT (N=32)	After RAT (N=60)	Before RAT (N=32)	After RAT (N=60)
<b>Knowledge:</b>	<b>3.72(0.66)</b>	<b>4.00(0.76)</b>	<b>64.58</b>	<b>82.22</b>
1.Residents organized didactic and lectures in a way that facilitated my learning	3.34(0.97)	3.97(0.82)**	50.00	81.67**
2.Residents presented materials in a clear and organized way	3.94(0.72)	4.03 (0.74)	78.13	85.00
3.Residents had command of the subject matter, including new developments in the field	3.88(0.75)	4.00 (0.86)	65.63	80.00
<b>Skills:</b>	<b>3.95(0.65)</b>	<b>4.10(0.62)</b>	<b>76.65</b>	<b>84.72</b>
4. Residents were sensitive and responsive to students as individuals	4.23(0.96)	4.28 (0.64)	87.10	96.67
5. Residents created an environment that stimulated my learning	3.84(0.82)	3.98 (0.81)	70.97	80.00
6. Residents teaching was helpful	3.84(0.86)	3.90 (1.04)	74.19	75.00
7. Residents teaching was helpful	3.63(1.13)	3.97 (0.71)	56.67	76.67
7. Residents provided timely feedback on my performance and progress throughout the clerkship	4.06(0.63)	4.22 (0.64)	83.87	88.33
8. Residents were open to a variety of points of view	4.19(0.75)	4.30 (0.67)	87.10	91.67
9. Residents communicated clearly with students	<b>4.01(0.68)</b>	<b>4.18 (0.62)</b>	<b>77.13</b>	<b>87.77</b>
<b>Values/Attitudes:</b>	3.50(1.08)	4.17(0.78)**	53.13	90.00**
10. Residents encouraged student Participation	3.87(0.96)	4.02 (0.91)	67.74	78.33
11. Residents were enthusiastic about teaching students	3.84(0.78)	3.97 (0.78)	67.74	78.33
12. Residents stimulated students to think independently and critically	4.48(0.81)	4.33 (0.60)	96.77	96.67
13. Residents demonstrated respect for all students	4.00(0.82)	4.22 (0.72)	80.65	86.67
14. Residents demonstrated concern for students learning	4.35 (0.80)	4.40 (0.56)	96.77	96.67
15. Residents were respectful and fair				
Total	3.94(0.61)	4.12 (0.62)	74.43	85.44

*P*<0.05, \*\**P*<0.005  
 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree  
 % Agree=percentage of individuals who agreed to the survey item; includes strongly agree and agree responses.

Figure 1 shows the medical students' evaluations of the knowledge (82%), skills (85%), and values/attitudes (88%) of residents' teaching after implementation of the RAT PI program. There were no overall statistical differences noted in the 3 main areas. However, a significant improvement was identified within the items of knowledge and value/attitudes of residents' teaching.

Students' ratings of residents' organization of didactics and lectures, and their facilitation of student learning, were higher after implementation of RAT than before implementation (*p*<0.005). Residents' encouragement for student participation (*p*<0.005) was also rated higher after the program was implemented.



**Figure1.** Students' Evaluations of Knowledge, Skills, Values/Attitudes of Residents' Teaching, Before and After the RAT PI Program

## 6. DISCUSSION

Medical students' evaluations support the importance of RAT PI programs. While teaching residents the fine points of educational design and instructional methods may require more focused education and ongoing supervision, the study's results indicate that residents' teaching can improve through relatively short, focused training. Specifically, helping residents learn to organize their didactic presentations improves medical students' learning. Additionally, providing residents with models of bedside instruction like the One Minute Preceptor model positively influences medical students' clinical knowledge and skills. The increased emphasis placed on medical student instruction seems to have increased residents' enthusiasm and a positive attitude toward medical student education, which resulted in greater participation by medical students. With few exceptions, all items assessing residents' teaching effectiveness improved after the training workshops.

At our institution, residents provide most of the didactic lectures and clinical ward teaching during the six-week medical student clerkship rotation. As part of the initiative to improve residents' teaching, we modified the didactic curriculum during the study period from lecture-based to role-play, and included group discussion and clinical vignettes during lessons to motivate student participation. The RAT training workshops equipped residents with the knowledge, skills and attitudes necessary to maximize the potential benefits of these new instructional methods, before these changes were implemented. Over the three-year period, we found significant improvements in students' evaluations of these items within the knowledge, skills and values/attitudes areas of resident teaching at the mid-point student evaluation, after implementation of the RAT PI program. In aggregate, these results emphasize the important impact a coherent, organized psychiatric clerkship curriculum that is supported by resident educational training can have on medical students' learning.

Although there were insignificant numerical differences in many items, we identified a statistically significant improvement in only two items. However, this result may be due to some items that were rated highly during the initial evaluation (i.e., "Residents were respectful and fair, residents demonstrated respect for all students, residents were sensitive and responsive

to students as individuals"), leaving little room for improvement due to ceiling effects. The outcomes of this early stage of the RAT PI program emphasize the value of continuing the RAT PI program at our institution.

One limitation of this study is that, at this time, we lack long-term qualitative data to determine the effectiveness of our RAT PI program. In addition, because this study was conducted at a single institution without control groups, the findings may not be generalizable to other institutions and programs. We conducted the study over a three-year period. The changes in the pools of residents being assessed and of medical students providing assessments were another limitation of the study. Medical students from different classes could vary in their optimism and assessments of psychiatry. However, there were no marked changes in medical students' rotation schedules or in their curriculum during the study period. Finally, medical students' perceptions of residents' teaching might not be completely accurate, and may possibly be affected by other factors, such as residents' personality styles.

A previous study showed that student perceptions of the overall quality of surgery residents' teaching instruction had a positive impact on their surgery shelf examination scores [15]. In the future, it would be interesting to assess medical students' psychiatry shelf examination scores in relation to implementation of the RAT program. Our future goal is to conduct a resident self-assessment after full RAT implementation, and to correlate the findings of their self-assessments with medical students' evaluations and assessments.

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