

Impact of a Teaching Rotation on Residents' Attitudes Toward Teaching: A 5-Year Study

KHANH-VAN T. LE-BUCKLIN, MD
REBECCA HICKS, MD
ALINE WONG, MD

Abstract

Background Residents play a tremendous role in educating medical students and other residents during their training. Many residency programs have thus instituted formal instruction on teaching. This 5-year study was conducted to quantitatively evaluate the impact of a teaching rotation on residents' attitudes towards teaching.

Methods Residents participated in a 1-month teaching rotation, which included didactic sessions as well as protected time to practice their teaching skills. Before and after the rotation, residents anonymously filled out surveys regarding their attitudes towards teaching. Data were collected from 73 residents from July 2004 to September 2009. The data were analyzed using a 2-tailed t-test with independent variables and a 1-way ANOVA followed by a posttest.

Results Four categories showed significant improvement, including feeling prepared to teach (20% increase, $P < .0001$), having confidence in their teaching ability (16% increase, $P < .0001$), being aware of their expectations as a teacher (19% increase, $P < .0001$), and feeling that their anxiety about teaching was at a healthy level (9% increase, $P = .0112$). There was an increase in the level of enthusiasm, but the P -value did not reach a significant range ($P = .121$). The level of enthusiasm started high and was significantly higher on the pretest than every other tested category ($P < .05$).

Conclusions Residents are enthusiastic about teaching, and their level of enthusiasm remains high following a teaching rotation. Residents feel more prepared to teach, more confident in their teaching ability, more aware of their expectations as a teacher, and less anxious about teaching following a formal teaching rotation.

Background

The Liaison Committee on Medical Education has stated that residents should be trained in teaching skills.¹ According to a 2001 survey by Morrison et al,² 55% of residency programs provide formal teaching instruction. Approaches vary from required teaching programs, teaching electives,^{3,4} protected blocks of time for teaching opportunities,^{5,6} designating "teaching residents" on clinical rotations,⁷ and organizing teaching skills retreats. Overall, lectures and workshops are

the most commonly used formats, and large group discussions or role playing are often used.²

Studies evaluating the attitudinal effects of those programs have mostly been narrative or qualitative in nature.^{3,4,11} Our 5-year study quantitatively evaluated the impact of a teaching rotation on residents' attitudes toward teaching.

Methods

In July 2004, the pediatric residency program at the University of California, Irvine, instituted a required 1-month teaching rotation for second-year residents named "Residents as Teachers." Didactic sessions for the residents included instruction on the following: effective lecturing, teaching in various clinical settings, understanding learning styles and emotional intelligence, and providing constructive feedback. The research study was reviewed and approved by the Institutional Review Board of the University of California, Irvine.

Residents implemented teaching skills via scheduled teaching activities. They practiced didactic teaching skills by (1) leading discussions regarding common pediatric topics at medical student conferences and (2) teaching key

Khanh-Van T. Le-Bucklin, MD, is Director of the Pediatric Residency Program in the Department of Pediatrics, University of California, Irvine; Rebecca Hicks, MD, is Chief Resident/Clinical Instructor at Miller Children's Hospital; and Aline Wong, MD, is Chief Resident/Clinical Instructor at Miller Children's Hospital.

The authors would like to acknowledge Jodi Richardson, MD, and M. Chris Hanks, PhD.

Funding: The authors report no external funding source.

Corresponding author: Rebecca Hicks, MD, Miller Children's Hospital, 2801 Atlantic Avenue, Long Beach, CA 90806, 310.222.1872, hicksreb@gmail.com

Received June 25, 2010; revision received December 1, 2010; accepted January 27, 2011.

DOI: 10.4300/JGME-D-10-00123.1

TABLE 1SAMPLE SURVEY ^a					
Survey Statements	Rating				
I feel well prepared to teach.	1	2	3	4	5
I am enthusiastic about teaching.	1	2	3	4	5
I have confidence in my teaching ability.	1	2	3	4	5
I am aware of what is expected of me as a teacher.	1	2	3	4	5
My anxiety regarding teaching is at a “healthy level.”	1	2	3	4	5

^a Scale is as follows: 1, never/untrue; 2, rarely/some truth; 3, sometimes/true as often as not; 4, frequently/basically true; and 5, always/definitely true.

pediatric topics at resident noon conferences. They practiced case-based teaching by (1) presenting and working through a case at morning report and (2) working through cases with medical students in small groups. Residents also participated in teaching clinical skills, and taught interns and medical students history and physical exam skills in the outpatient and inpatient settings. They worked one-on-one and in small groups with interns and medical students, and provided performance feedback.

Before and after the rotation, residents were given a maximum of 5 minutes to anonymously fill out questionnaires focused on their attitudes toward teaching. Participation was voluntary. The questionnaire consisted of providing responses to 5 questions derived from Part II of the American Academy of Pediatrics’ *Residents as Teachers Handbook* pretest.¹² A Likert scale was used to quantify responses (TABLE 1).

Results

Residents (n = 73) completed prerotation questionnaires from July 2004 through September 2009, and 70 residents completed postrotation questionnaires.

The data from the questionnaires were analyzed using the Mann-Whitney U test. The mean values increased for all of the categories examined when comparing the

prerotation and postrotation questionnaires (TABLE 2). Four categories showed a significant increase: feeling prepared to teach ($P < .0001$), having confidence in teaching ability ($P < .0001$), being aware of expectations as a teacher ($P < .0001$), and having a healthy anxiety level ($P = .0037$). There was an increase in the level of enthusiasm, but the P value did not reach a statistically significant range ($P = .12$).

Using the Kruskal-Wallis method of analysis, the level of enthusiasm was found to be significantly higher on the prerotation questionnaire than all other attitudinal factors, including the level of preparedness, confidence, awareness of expectations, and level of anxiety ($P < .0001$ compared to all other factors).

Discussion

Analysis of the prerotation and postrotation questionnaires from July 2004 through September 2009 demonstrated that following a teaching rotation, residents felt more prepared to teach, developed greater confidence in their teaching skills, possessed a greater awareness of their expectations as teachers, and had less anxiety about teaching.

The level of enthusiasm rose following the teaching rotation, but the increase did not reach a statistically

TABLE 2RESULTS FROM PREROTATION AND POSTROTATION QUESTIONNAIRES			
Question	Prerotation ^a	Postrotation ^b	P Value ^c
1. Prepared?	3.37	4.06	< .0001
2. Enthusiastic?	4.25	4.41	.12
3. Confident?	3.45	4.01	< .0001
4. Aware of expectations?	3.55	4.24	< .0001
5. Anxiety “healthy”?	3.77	4.11	.0037

^a Prerotation questionnaire Likert scale means.
^b Postrotation questionnaire Likert scale means.
^c P value as calculated using a two-tailed t test with independent variables.

significant range. However, the level of enthusiasm was significantly higher prior to the rotation than the other factors, thus demonstrating that residents were already enthusiastic about teaching, and their level of enthusiasm remained high following a teaching rotation.

This study's primary contribution is its quantitative design, which provides objective data to support prior narrative and qualitative reports on the positive attitudinal effects of a teaching rotation on resident trainees.^{8,9,11} Validity is augmented by the 5-year length of the study and the large number of residents involved in the study ($n = 73$). Previously, the largest number of residents studied for attitudinal effects was 21, and the greatest length of study was 1 year.¹¹

Our study has a few limitations. First, all of the study participants are categorical pediatric residents from the same residency program. Thus, our results may not be generalizable to residents from other specialties. Second, our program is at a large university teaching institution, which may preselect for residents with a strong interest in teaching.

We plan to expand upon the findings in this study. The long-term success of our program may be evaluated by ascertaining after graduation whether the residents' positive attitudes toward teaching have been sustained, and how many of these residents are still teaching.

Further areas of research may include evaluation of residents' teaching skills by structured examination of their lectures and bedside teaching. Previous studies using structured examination have shown mixed improvement in residents' teaching abilities following completion of a formal training program.^{5,6,13} However, the training programs consisted of a miniretreat and/or a series of noon conference lectures rather than a 1-month rotation with dedicated teaching time.

Conclusions

Residents are enthusiastic about teaching, and their level of enthusiasm remains high following a teaching rotation.

Residents feel more prepared to teach, more confident in their teaching ability, more aware of their expectations as a teacher, and less anxious about teaching following a formal teaching rotation. Our quantitative study, involving a relatively large number of residents over 5 years, provides objective data to support prior narrative and qualitative reports on the positive attitudinal effects of a teaching rotation on residents.

References

- 1 Liaison Committee on Medical Education Accreditation Standards, Section II.C.ED-24. Available at: <http://www.lcme.org/functionslist.htm>. Accessed April 14, 2011.
- 2 Morrison EH, Friedland JA, Boker J, Rucker L, Hollingshead J, Murata P. Residents-as-teachers training in U.S. residency programs and offices of graduate medical education. *Acad Med*. 2001;76:51–84.
- 3 Bensinger LD, Meah YS, Smith LG. Resident as teacher: the Mount Sinai experience and a review of the literature. *Mt Sinai J Med*. 2005;72(5):307–311.
- 4 Weissman MA, Bensinger LB, Koestler JL. Resident as teacher: educating the educators. *Mt Sinai J Med*. 2006;73(8):1165–1169.
- 5 Morrison EH, Rucker L, Boker JR, et al. The effect of a 13-hour curriculum to improve residents' teaching skills: a randomized trial. *Ann Intern Med*. 2004;141:257–263.
- 6 Morrison EH, Rucker L, Boker JR, et al. A pilot randomized, controlled trial of a longitudinal residents-as-teachers curriculum. *Acad Med*. 2003;78:722–729.
- 7 Jamshidi R. Formalizing teaching responsibilities for junior surgical housestaff encourages educator development. *J Surg Educ*. 2008;65(6):514–517.
- 8 Morrison EH, Shapiro JF, Harthill M. Resident doctors' understanding of their roles as clinical teachers. *Med Educ*. 2005;39:137–144.
- 9 The American Academy of Pediatrics Section on Residents. Residents as Teachers Handbook. Elk Grove Village, IL: American Academy of Pediatrics; 2002:9.
- 10 Busari JO, Prince KIAH, Scherpbier AJA, Van der Vleuten CPM, Essed GGM. How residents perceive their teaching role in the clinical setting: a qualitative study. *Med Teach*. 2002;24(1):57–61.
- 11 Apter A, Metzger R, Glassroth J. Residents' perceptions of their role as teachers. *J Med Educ*. 1988;63:900–905.
- 12 Frattarelli LC, Kasuya R. Implementation and evaluation of a training program to improve resident teaching skills. *Am J Obstet Gynecol*. 2003;189(3):670–673.
- 13 Busari JO, Scherpbier AJA, Van der Vleuten CPM, Essed GGM. The perceptions of attending doctors of the role of residents as teachers of undergraduate clinical students. *Med Educ*. 2003;37(3):241–247.

The following are corrections to the June 2011 issue.

1. Sullivan GM. A primer on the validity of assessment instruments. *J Grad Med Educ.* 2011;3(2):119–120.

On p 119, the sentence should read: Cronbach alpha calculates correlation among all the variables, in every combination, and generates one number that the closer it is to 1, the higher the reliability estimate.

2. Salem JK, Jones RR, Sweet DB, Hasan S, Torregosa-Arcay H, Clough L. Improving care in a resident practice for patients with diabetes. *J Grad Med Educ.* 2011;3(2):196–202.

The Figure legends should read:

Figure 1 Description of Sample Selection for Outcomes Analysis

Figure 2 Timeline for Implementation of Interventions

3. Saeed F, Majeed MH, Kousar N. Easing international medical graduates entry into us training. *J Grad Med Educ.* 2011;3(2):269.

The lead author's name is Fahad Saeed, MD.

4. Sweeney A, Stephany A, Whicker S, Bookman J, Turner DA. Senior Pediatric Residents as Teachers for an

Innovative Multidisciplinary Mock Code Curriculum. *J Grad Med Educ.* 2011;3(2):188–195.

The Figure 3 label for the seventh column is: Communicating Effectively.

5. Le-Bucklin KT, Hicks R, Wong A. Impact of a Teaching Rotation on Residents' Attitudes Toward Teaching: A 5-Year Study. *J Grad Med Educ.* 2011;3(2):253–255.

The Results section of the Abstract should read:

Results: Four categories showed significant improvement, including feeling prepared to teach ($P < .0001$), having confidence in their teaching ability ($P < .0001$), being aware of their expectations as a teacher ($P < .0001$), and feeling that their anxiety about teaching was at a healthy level ($P = .0037$). There was an increase in the level of enthusiasm, but the P value did not reach a significant range ($P = .12$). The level of enthusiasm started high and was significantly higher on the pretest than every other tested category ($P < .0001$).

Footnote c to Table 2 should read: P value as calculated using the Mann-Whitney U test.