

## BRIEF REPORT

# Longitudinal Study of Family Medicine Residents' Clinical Teaching After Participation in the Residents-as-Teachers Program

Oksana Babenko, PhD; Lillian Au, MD, MEd; Sudha Koppula, MD, MClSc; Olga Szafran, MHSA

## AUTHOR AFFILIATION:

Department of Family Medicine, University of Alberta, Alberta, Edmonton, Canada

## CORRESPONDING AUTHOR:

Oksana Babenko, Department of Family Medicine, University of Alberta, Alberta, Edmonton, Canada,  
[oksana.babenko@ualberta.ca](mailto:oksana.babenko@ualberta.ca)

**HOW TO CITE:** Babenko O, Au L, Koppula S, Szafran O. Longitudinal Study of Family Medicine Residents' Clinical Teaching After Participation in the Residents-as-Teachers Program. *Fam Med*. 2023;55(8):539–543.  
 doi: [10.22454/FamMed.2023.690209](https://doi.org/10.22454/FamMed.2023.690209)

**PUBLISHED:** 21 June 2023

© Society of Teachers of Family Medicine

## ABSTRACT

**Background and Objective:** Residents-as-teachers (RAT) programs provide opportunities for residents to gain teaching skills. Published studies have assessed RAT programs largely at a single point in time rather than longitudinally. To address this gap, we examined (a) longitudinal trends in RAT participants' interest, comfort, confidence, skill, and familiarity with aspects of clinical teaching; and (b) subsequent involvement in clinical teaching.

**Methods:** We conducted a longitudinal survey of one cohort of family medicine residents (N=56) who participated in the RAT program during residency. We collected data before and after the RAT program and at one and three years into practice (2016–2020). We measured outcomes including interest, comfort, confidence, skill, familiarity with aspects of clinical teaching and involvement in clinical teaching. We performed longitudinal analysis using repeated measures analysis of variance.

**Results:** Response rates at four data collections were 63% (n=35), 66% (n=37), 55% (n=31), and 34% (n=19), respectively. We observed consistent trends in interest, comfort, confidence, skill, and familiarity with aspects of clinical teaching; mean scores increased from before to after the RAT program and subsequently decreased in the early years in practice. At 1 and 3 years in practice, 71% and 74% of respondents, respectively, reported being involved in teaching, primarily teaching medical students.

**Conclusions:** The RAT program appears to be a positive contributing influence on family medicine graduates' perceived preparedness to teach and their involvement in teaching after graduation from residency. A relatively high proportion of residents are involved in teaching in the early years in practice.

## INTRODUCTION

Clinical teaching is an important part of a physician's role because physicians provide clinical education to learners, patients, and other health professionals. The education of medical students, in particular, relies on teaching provided by physicians in hospital and community settings. The need for skilled clinical teachers, coupled with the expectation by regulatory bodies for resident physicians to teach, has resulted in the creation of residents-as-teachers (RAT) programs across North America.<sup>1–5</sup>

RAT programs provide opportunities for residents to gain teaching skills through teaching medical students in structured settings, often with support from faculty coaches.<sup>6,7</sup> Several literature reviews of RAT publications have confirmed the benefits of RAT programs for residents, including increased confidence, knowledge of educational principles, and teaching

skills.<sup>2,8–10</sup> Yet, the focus of RAT publications has been on a single point in time, usually immediately after completion of the program. No study has followed residents longitudinally to determine whether teaching skills were maintained in the early years of clinical practice. Some also suggested that more objective outcomes, such as involvement in clinical teaching, are required to ascertain the true effectiveness of RAT programs.<sup>2,8,9</sup>

To address this gap, we examined (a) longitudinal trends in residents' interest, comfort, confidence, skill, and familiarity with clinical teaching during residency and in clinical practice; and (b) teaching involvement in the early years of independent practice after the RAT program.<sup>7</sup>

## METHODS

We conducted a longitudinal survey study of one cohort of family medicine (FM) residents who participated in the RAT program as part of the academic curriculum. The program is delivered throughout the second year of 2-year residency and consists of a didactic component, where residents receive teaching on core teaching principles (eg, how to teach a skill, provide feedback), and an interactive component, where residents teach six history-taking sessions to small groups of medical students. Faculty coaches support residents by providing guidance and feedback based on direct observation of residents teaching in small groups.

We collected data before and after the RAT program (pretest in August 2016 and posttest in June 2017, respectively) and at 1 and 3 years in practice (summers 2018 and 2020, respectively). Consent was implied by the return of completed questionnaires. Ethics approval was granted by the Research Ethics Board 2 (REB2), University of Alberta (#Pro00066624).

Participants rated their agreement (1=not at all agree; 10=completely agree) with 14 items (Table 1) assessing interest, comfort, confidence, skill, and familiarity with clinical teaching. At 1 and 3 years in practice, we included additional questions to assess teaching involvement, whether they taught in the past year, who they taught, and in what settings. We pilot tested the questionnaire with two recently graduated residents and two clinical faculty. We summarized data using descriptive statistics. We performed longitudinal analysis using repeated measures analysis of variance.

## RESULTS

Fifty-six residents (57% females; mean [SD] age=29[5] years) were eligible to take part in the study. The response rates were 63% (n=35) before RAT, 66% (n=37) after RAT, 55% (n=31) at 1 year, and 34% (n=19) at 3 years in practice.

Analysis of interest, comfort, confidence, skill, and familiarity with clinical teaching revealed consistent trends; mean scores increased from pretest (before RAT) to posttest (after RAT) and decreased in the early years in practice (Table 1). However, even at 3 years, the scores were higher than before participation in RAT on all items except “I am interested in teaching medical students.”

Of those who responded to the surveys, 71% and 74% reported being involved in teaching at 1 and 3 years in practice, respectively. Of those who reported teaching, 50% and 36% were doing locums at 1 and 3 years in practice. At 1 year, physicians reported teaching medical students (82%) and/or patients (59%), and teaching one on one (59%) and/or in small groups (50%). At 3 years, physicians reported teaching medical students (93%), residents (64%), and/or patients (64%), and teaching in their clinics (71%), delivering small group teaching (64%), and/or teaching one on one (57%; Figure 1).

## CONCLUSIONS

A unique feature of this longitudinal study was examination of the impact of the RAT program on involvement in teaching after

residents completed residency training and entered practice. At 3 years, more than 70% of graduates reported being involved in teaching. While the percentage is relatively high, an unknown is how many would have participated as teachers had they not been exposed to the RAT program.

The majority of study participants reported teaching medical students, and fewer reported teaching residents at 1 and 3 years in practice. This pattern reflects the higher comfort in teaching students than residents also reported by the participants. This finding may be, in part, attributed to the fact that learners in the RAT program are medical students. Another important factor to note is that at our institution, teaching medical students is remunerated. Further, teaching residents requires an established patient panel, and many new graduates tend to locum during initial years in practice.<sup>11</sup> Future studies, employing interviews and focus groups, are needed to explore whether the observed patterns are driven by external (eg, payment, practice type) and/or internal (eg, comfort, experience) factors.

The observed increase in residents' interest, comfort, confidence, skill, and familiarity with teaching immediately after participation in RAT is consistent with published reviews of RAT programs.<sup>2,8–10</sup> The finding that these positive effects appear to decrease in the early years of practice is concerning. We speculated that this decrease in teaching engagement may be due to being busy setting up their practice after residency, not being aware of teaching opportunities, and/or not feeling supported in teaching roles. Qualitative investigations are warranted to determine necessary supports and policies for recruiting and retaining clinical teachers.

Our study had several limitations. Selection bias is possible in that residents interested in teaching may have been motivated to participate in the study. It is also possible that the increase in interest, comfort, confidence, skill, and familiarity was confounded by other factors, including increased knowledge and feeling better prepared to teach as residents advanced through training.<sup>12</sup> Consistent with health professions surveys,<sup>13</sup> the response rate was low, particularly for the fourth data collection, which took place during the COVID-19 pandemic.

Generalizations are limited by the fact that ours was a single-site study and had no control group. We did, however, collect internal, unpublished data in 2013–2014 from our graduates who were, on average, 2.5 years in practice (finished residency in 2011, before RAT was implemented). Results showed that 57% reported having at least 5% devoted to direct patient care with students/residents in the past year. This percentage is lower than the 74% who reported being involved in teaching in the current study. Earlier studies conducted in the United States reported between 30%<sup>14</sup> and 43%<sup>15</sup> of family physicians teaching medical students. A study of family physicians in Germany reported 57% had hosted a postgraduate, vocational trainee in the preceding 5 years.<sup>16</sup> Note that although the percentages may appear to support the RAT program, they are not directly comparable. What

is important to emphasize is that equipping residents with attitudes, knowledge, and skills they need to become effective clinical teachers is likely to have positive effects on their teaching in practice. The quality of teaching also matters, and continued efforts to further develop RAT programs are warranted.

## REFERENCES

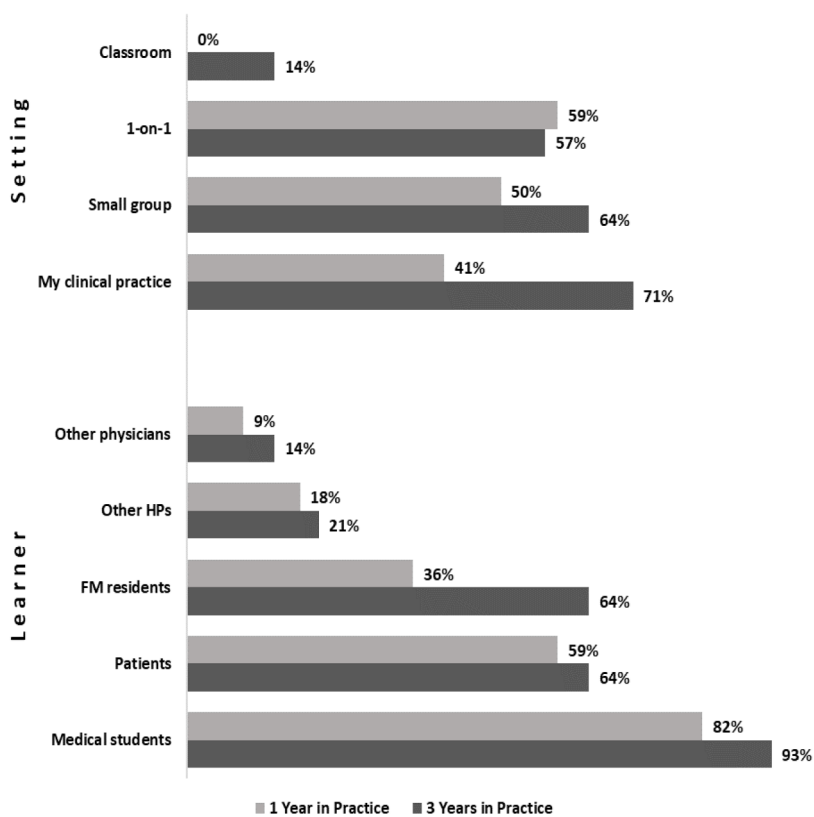
1. Al-Achkar M, Davies M, Busha ME, Oh RC. Resident-as-teacher in family medicine: a CERA survey. *Fam Med*. 2015;47(6):452-458.
2. Bree KK, Whicker SA, Fromme HB, Paik S, Greenberg L. Residents-as-teachers publications: what can programs learn from the literature when starting a new or refining an established curriculum?. *J Grad Med Educ*. 2014;6(2):237-248.
3. Ng VK, Burke CA, Narula A. Residents as teachers: survey of Canadian family medicine residents. *Can Fam Physician*. 2013;59(9):421-427.
4. Mckeon BA, Ricciotti HA, Sandora TJ. A consensus guideline to support resident-as-teacher programs and enhance the culture of teaching and learning. *J Grad Med Educ*. 2019;11(3):313-318.
5. Achkar A, Hanauer M, Morrison M, Davies EH, Oh MK, C R. Changing trends in residents-as-teachers across graduate medical education. *Adv Med Educ Pract*. 2017;8:299-306.
6. Ramani S, Mann K, Taylor D, Thampy H. Residents as teachers: Near peer learning in clinical work settings: AMEE Guide No. 106. *Med Teach*. 2016;38(7):642-655.
7. Tan A, Babenko O, England A, Humphries P, Hillier T. A novel resident-as-teacher curriculum: the role of experiential learning and coaching. *MedEdPublish*. 2017;6:168-168.
8. Dannaway J, Ng H, Schoo A. Literature review of teaching skills programs for junior medical officers. *Int J Med Educ*. 2016;7:25-31.
9. Hill AG, Yu TC, Barrow M, Hattie J. A systematic review of resident-as-teacher programmes. *Med Educ*. 2009;43(12).
10. Wamsley MA, Julian KA, Wipf JE. A literature review of “resident-as-teacher” curricula: do teaching courses make a difference?. *J Gen Intern Med*. 2004;19(5):574-581.
11. Myhre DL, Konkin J, Woloschuk W, Szafran O, Hansen C, Crutcher R. Locum practice by recent family medicine graduates. *Can Fam Physician*. 2010;56(5):183-190.
12. Dotters-Katz S, Hargett CW, Zaas AK, Criscione-Schreiber LG. What motivates residents to teach? The attitudes in clinical teaching study. *Med Educ*. 2016;50(7):768-777.
13. Phillips AW, Friedman BT, Utrankar A, Ta AQ, Reddy ST, Durning SJ. Surveys of health professions trainees: prevalence, response rates, and predictive factors to guide researchers. *Acad Med*. 2017;92(2):222-228.
14. Vinson DC, Paden C, Devera-Sales A, Marshall B, Waters EC. Teaching medical students in community-based practices: a national survey of generalist physicians. *J Fam Pract*. 1997;45(6):487-494.
15. Kearl GW, Mainous AG 3rd. Physicians’ productivity and teaching responsibilities. *Acad Med*. 1993;68(2):166-167.
16. May M, Mand P, Biertz F, Hummers-Pradier E, Kruschinski C. A survey to assess family physicians’ motivation to teach undergraduates in their practices. *PLoS One*. 2012;7(9):45846-45846.

**TABLE 1.** Family Medicine Residents' Interest, Comfort, Confidence, Skill, and Familiarity With Clinical Teaching

	Before RAT	After RAT	1 year in practice	3 years in practice	Trend P value
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
<b>Interest</b>					
I would choose to include clinical teaching as part of my career.	8.83 (1.15)	9.21 (0.82)	8.70 (1.10)	8.72 (0.97)	.009
I am interested in teaching medical students.	8.57 (1.18)	9.20 (0.90)	8.71 (1.19)	8.37 (1.05)	<.001
I am interested in teaching residents.	8.31 (1.22)	8.69 (0.94)	8.00 (1.50)	8.56 (1.07)	.004
<b>Comfort</b>					
I am comfortable teaching patients.	8.47 (1.12)	9.20 (0.69)	9.01 (0.73)	8.90 (0.76)	<.001
I am comfortable teaching medical students.	7.57 (1.30)	8.57 (0.91)	8.14 (1.07)	7.90 (1.23)	<.001
I am comfortable teaching residents.	6.17 (1.42)	7.26 (1.34)	6.79 (1.29)	7.21 (1.21)	<.001
<b>Confidence</b>					
I am confident in my clinical teaching skills.	6.88 (1.36)	7.30 (0.97)	7.37 (0.83)	7.22 (1.04)	<.001
I am confident assessing learners.	6.72 (1.43)	7.88 (1.29)	7.31 (1.06)	7.07 (1.26)	<.001
<b>Skill</b>					
I am skilled at direct observation of a learner.	6.53 (1.39)	7.90 (1.03)	7.45 (1.03)	7.33 (1.17)	<.001
I am skilled at being a small-group facilitator.	6.50 (1.44)	8.31 (0.81)	7.38 (1.00)	7.28 (0.85)	<.001
I am skilled at providing feedback.	6.34 (1.44)	7.80 (0.92)	7.21 (1.02)	6.99 (1.12)	<.001
<b>Familiarity</b>					
I am familiar with the principles of effective communication in the medical interview.	7.53 (1.14)	8.49 (0.97)	8.23 (0.90)	8.06 (0.89)	<.001
I am familiar with teaching the elements of physical examination.	6.94 (1.42)	8.27 (1.10)	7.63 (0.86)	7.62 (0.90)	<.001
I am familiar with the principles of teaching and learning.	6.55 (1.47)	8.07 (1.04)	7.39 (1.16)	7.40 (0.91)	<.001

Abbreviations: RAT, residents as teachers; SD, standard deviation.

**FIGURE 1.** Involvement in Teaching at 1 and 3 Years in Clinical Practice



Abbreviation: FM, family medicine