Educating Generalists: Factors of Resident Continuity Clinic Associated With Perceived Impact on Choosing a Generalist Career

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Abstract

Background Fewer residents are choosing general internal medicine (GIM) careers, and their choice may be influenced by the continuity clinic experience during residency. We sought to explore the relationship between resident satisfaction with the continuity clinic experience and expressed interest in pursuing a GIM career.

Methods We surveyed internal medicine residents by using the Veterans Health Administration Office of Academic Affiliations Learners' Perceptions Survey—a 76-item instrument with established reliability and validity that measures satisfaction with faculty interactions, and learning, working, clinical, and physical environments, and personal experience. We identified 15 reliable subscales within the survey and asked participants whether their experience would prompt them to consider future employment opportunities in GIM. We examined the association between satisfaction measures and future GIM interest with 1-way analyses of variance followed by Student-Newman-Keuls post hoc tests.

Results Of 217 residents, 90 (41%) completed the survey. Residents felt continuity clinic influenced career choice, with 22% more likely to choose a GIM career and 43% less likely. Those more likely to choose a GIM career had higher satisfaction with the learning ($P = .001$) and clinical ($P = .002$) environments and personal experience ($P < .001$). They also had higher satisfaction with learning processes ($P = .002$), patient diversity ($P < .001$), coordination of care ($P = .009$), workflow ($P = .001$), professional/personal satisfaction ($P < .001$), and work/life balance ($P < .001$).

Conclusions The continuity clinic experience may influence residents' GIM career choice. Residents who indicate they are more likely to pursue GIM based on that clinical experience have higher levels of satisfaction. Further prospective data are needed to assess if changes in continuity clinic toward these particular factors can enhance career choice.

Editor's Note: The online version of this article contains the subscales used in this study.

Background

Primary care is an essential component of health care and is associated with better health outcomes and lower costs.[1,2] At present, the number of physicians practicing primary care is not adequate to meet the needs of the US population.[3] Exacerbating this trend, residents are increasingly choosing nonprimary care careers.[4,5]

Although many factors (eg, prestige, salary, patient population, schedule) influence career choice, exposure to different clinical settings during residency may play a role.[6,7,8] To understand the possible relationship between continuity clinic and career choice, studies in internal medicine and pediatrics have assessed resident satisfaction with the continuity clinic experience. Residents are more satisfied with clinic when preceptors demonstrate enthusiasm, have knowledge of clinic operations, and are good role models.[9,10,11] Similarly, residents have higher satisfaction when there is adequate nursing support, efficient patient flow, and timely referrals.[10–12]

The literature suggests that resident satisfaction with these factors of continuity clinic do not correlate with choosing a generalist career.[10,12] No study to date has addressed the full impact that continuity clinic may have on career choice. We studied the factors associated with

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changing interest in pursuing a generalist career, based on the continuity clinic experience.

What was Known

Experiences during residency may influence choice of a primary care career.

What is new

Higher satisfaction with the internal medicine continuity clinic was associated with greater likelihood of choosing a generalist career.

Limitations

Use of retrospective data makes it impossible to assess the direction of the association.

Bottom line

Continuity experience may be a factor in generalist career choice; further investigation is needed for confirmation.

Methods

Design

We surveyed internal medicine residents from the University of California, San Francisco (UCSF) regarding their perception of the influence that continuity clinic had on their future career choice. Residents were surveyed by using the Department of Veterans Affairs Office of Academic Affiliations Learners' Perceptions Survey (DVA OAA LPS).[13]

Participants

All postgraduate year (PGY)–2 and PGY-3 residents from 2007–2009 were surveyed. This study was approved by the UCSF Committee on Human Research.

Setting

Residents anonymously completed the survey based on their exclusive participation in 1 of 3 academic continuity clinic sites: a university clinic, a safety net county clinic, or a Veterans Affairs clinic. Residents were equally distributed among clinics, and surveys were completed by residents in categorical and primary care tracks. Two residents completed the survey twice. Of those who completed the survey twice, only the first completed survey was used.

Measures

The DVA OAA LPS is a 76-item, reliable and validated survey that assesses learner satisfaction with continuity clinic.[11] There are 6 domains: faculty interactions (14 items), learning environment (16 items), working environment (12 items), clinical environment (14 items), physical environment (6 items), and personal experience (14 items). Each domain includes an overall satisfaction measure. Each item is rated on a 5-point Likert scale of 1 (very dissatisfied) to 5 (very satisfied). Previously, researchers have found each domain to be internally consistent, with reliabilities ranging from 0.87 to 0.96.[11]

In our sample, we checked reliability of each domain by conducting a principal components factor analysis with varimax rotation for each domain. We used SPSS version 17.0 (Chicago, IL) to perform the factor analysis. Within the 6 domains, we found 15 subscales (provided as online supplemental content) that were reliable using a threshold value of the Cronbach α of 0.75 or higher: faculty teaching ($\alpha = 0.84$), faculty availability ($\alpha = 0.75$), faculty feedback ($\alpha = 0.78$), learning processes ($\alpha = 0.90$), clinic/ward balance ($\alpha = 0.83$), patient diversity ($\alpha = 0.91$), resident autonomy (2 items), clinical support services ($\alpha = 0.82$), coordination of care ($\alpha = 0.75$), computer services ($\alpha = 0.91$), workflow ($\alpha = 0.85$), interdisciplinary teamwork ($\alpha = 0.88$), facility upkeep ($\alpha = 0.88$), professional/personal satisfaction ($\alpha = 0.85$), and work/life balance ($\alpha = 0.89$).

To assess impact, we asked residents to answer the question, "As a result of this clinical training experience, how likely would you be to consider a future employment opportunity in general internal medicine (GIM)?" on a 5-point Likert scale (1 = a lot less likely, 5 = a lot more likely). We also asked residents to retrospectively indicate their likelihood of pursuing a future career in GIM before initiating their continuity clinic experience (1 = not at all likely, 5 = very likely).

Residents assessed impact by answering the following questions: "Would you choose this continuity clinic experience again?" (definitely, probably, probably not, definitely not, with the last 2 collapsed into a single level); "How would you rate the value of the continuity clinic experience?" (1 = poor, 5 = excellent); and "On a scale of 0 to 100, where 100 is a perfect score and 70 is a passing score, what numerical score would you give the continuity clinic experience you have had?" Residents also responded to questions about career choice (subspecialty, GIM, hospitalist, research, education, administration/policy, clinical care).

Analysis

We scored subscales by averaging the items in the scale. Using the subscales and overall satisfaction in each domain, value of clinic, and the 100-point score as dependent variables, we performed 3 separate 1-way analyses of variance, followed by post hoc Student-Newman-Keuls tests, using the future GIM career responses as the main effects variables. SPSS version 17.0 was used and α was set at .01, given multiple comparisons.

Results

Of 217 eligible residents, 90 completed the survey. Resident career interests were diverse, with 67% interested in internal medicine subspecialties; 29%, GIM; 21%, hospitalist medicine; 36%, clinical research; 44%, medical education; 11%, administration/policy; and 100%, providing direct patient care (TABLE 1). We combined scores of "a lot less likely" (n = 17) and "somewhat less likely" (n = 22) into a group called "less likely" and scores of "somewhat more likely" (n = 16) and "a lot more likely" (n = 4) into a group called "more likely." Most residents felt the continuity clinic experience affected career choice, with 22% reporting they were somewhat more or a lot more likely to pursue GIM and 43% reporting they were somewhat less or a lot less likely. Thirty-one residents selected a response of "no difference."

TABLE 2 provides the satisfaction scores across the 3 groups: more likely to pursue, less likely to pursue, or no impact on pursuit of a GIM career. Residents' overall satisfaction with the learning ($P = .001$) and clinical ($P = .002$) environments as well as personal experience ($P < .001$) was significantly different among the groups, with residents more likely to pursue GIM having significantly higher satisfaction levels. There were also significant differences in satisfaction among groups in the following subscales: learning processes ($P = .002$), patient diversity ($P < .001$), coordination of care ($P = .009$), workflow ($P = .001$), professional/personal satisfaction ($P < .001$), and work/life balance ($P < .001$), with residents more likely to pursue GIM having higher satisfaction levels. The remaining subscales were not significantly different across groups (FIGURE).

There were also differences in valuing clinic ($P < .001$) and rating the experience on a 100-point scale ($P = .002$), with those more likely to pursue GIM, based on their continuity clinic experience, having higher satisfaction levels. The overall satisfaction measures and subscales reached significance when residents were stratified as definitely choosing, probably choosing, or not choosing the same continuity clinic experience again (data not shown). When stratified by interest in pursuing GIM before their continuity clinic experience, only faculty availability ($P = .005$) was significantly correlated with interest, while overall satisfaction domains and the other subscales did not reach significance (data not shown).

TABLE 1 **Resident Characteristics**

	Residents, % (n = 90)
Future career interest in:	
Subspecialty	67
GIM	29
Hospitalist medicine	21
Clinical research	36
Medical education	44
Administration/policy	11
Providing direct patient care	100
Based on continuity clinic experience, likelihood of pursuing a future career in GIM:	
More likely	22.2
Less likely	43.3
No difference	34.5

Abbreviation: GIM, general internal medicine.

Discussion

Impact of the continuity clinic experience on resident career choice has been difficult to characterize because there are no prior studies demonstrating an association between satisfaction with the experience and career choice. Our study is novel in that it assesses resident interest in GIM, based on the continuity clinic experience. Most residents feel the experience influences career choice and that higher satisfaction with learning, patient diversity, clinic operations, and personal experience is associated with increased interest in a GIM career. Additionally, when residents are stratified by interest in GIM before their continuity experience, almost no associations emerge. This further suggests that there is a relationship between continuity clinic experience and future GIM interest.

The largest difference in mean satisfaction scores among the 3 resident groups (more likely to pursue, less likely to pursue, or no impact on pursuit of a GIM career) was in the personal experience domain. This domain captured personal/professional satisfaction (patient relationships/continuity, support from colleagues/attending physicians, and personal reward) and level of work/life balance (fatigue, stress, work enjoyment, and personal balance). This suggests that finding the experience rewarding, enjoyable, and in balance with personal pursuits is likely critical when choosing a GIM career. Optimizing mechanisms to minimize and reduce burnout, providing a positive professional environment, and emphasizing resident impact on patient outcomes are important factors in structuring the continuity clinic experience.

The learning and clinical environments were also important. Two key subscales suggested that a poor learning environment is associated with lower GIM interest: learning processes (eg, ensuring adequate time for

TABLE 2 **Continuity Clinic Satisfaction Scores Associated With Likelihood of Pursuing a General Internal Medicine (GIM) Career (Significant *P* Value < .01)**

	Likelihood of Pursuing a Career in GIM, Based on Continuity Clinic Experience			
	Less Likely	No Change	More Likely	
Satisfaction Variables	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	***P* Value**
Faculty interaction				
Overall	4.46 (0.65)	4.55 (0.51)	4.79 (0.42)	.115
Faculty teaching	4.46 (0.53)	4.62 (0.44)	4.80 (0.27)	.026
Faculty availability	4.68 (0.52)	4.66 (0.54)	4.87 (0.27)	.255
Faculty feedback	4.23 (0.78)	4.21 (0.85)	4.40 (0.72)	.692
Learning environment				
Overall	3.22[a] (1.02)	3.90[b] (0.98)	4.20[b] (0.77)	.001
Learning processes	3.07[a] (0.77)	3.72[b] (0.82)	3.81[b] (0.85)	.002
Clinic/ward balance	2.56 (1.23)	2.96 (1.19)	3.29 (1.21)	.129
Patient diversity	3.43[a] (1.17)	4.24[b] (0.96)	4.50[b] (0.54)	.001
Resident autonomy	4.45 (0.69)	4.72 (0.59)	4.70 (0.38)	.119
Working environment				
Overall	3.77 (0.81)	4.04 (1.07)	4.42 (0.93)	.041
Clinical support services	4.15 (0.67)	4.26 (0.81)	4.43 (0.73)	.398
Coordination of care	3.06[a] (1.20)	3.50[a,b] (1.11)	4.10[b] (1.10)	.009
Computer services	4.12 (1.01)	4.02 (1.36)	4.30 (0.78)	.665
Clinical environment				
Overall	3.03[a] (0.93)	3.50[a] (1.11)	4.05[b] (0.91)	.002
Workflow	3.04[a] (0.77)	3.45[a] (1.04)	4.02[b] (0.72)	.001
Interdisciplinary teamwork	4.16 (0.81)	4.34 (0.78)	4.77 (0.41)	.011
Physical environment				
Overall	4.14 (0.81)	4.20 (0.89)	4.37 (0.76)	.63
Facility upkeep	4.29 (0.78)	4.20 (0.88)	4.55 (0.67)	.303
Personal experience				
Overall	3.49[a] (0.84)	3.84[a] (0.78)	4.58[b] (0.51)	.001
Professional/personal satisfaction	3.88[a] (0.61)	4.34[b] (0.42)	4.68[c] (0.37)	.001
Work/life balance	3.20[a] (0.80)	3.67[b] (0.86)	4.21[c] (0.83)	.001
Overall clinical experience				
Value of clinic	3.26[a] (0.92)	4.03[b] (0.87)	4.60[c] (0.50)	.001
Clinic score (1 to 100)	73.7[a] (11.5)	79.8[a,b] (13.2)	85.3[b] (7.5)	.002

Note: Superscript identifies which groups were significantly different from one another by Student-Newman-Keuls post hoc tests.

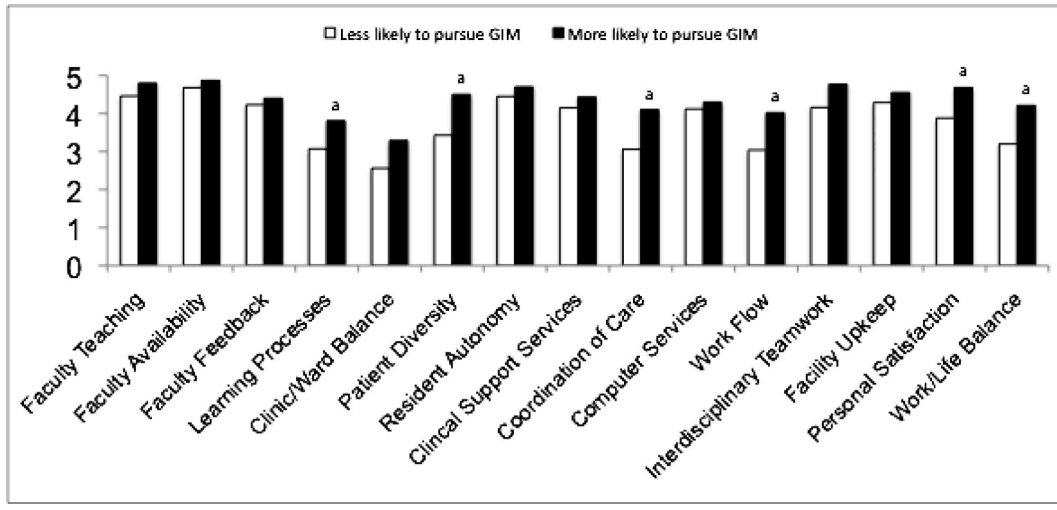

FIGURE **Comparison of Satisfaction with 15 Subscales of Continuity Clinic Between Groups Less Likely and More Likely to Pursue General Internal Medicine (GIM)**

a = *P* value < .01; 1 = very dissatisfied; 5 = very satisfied.

teaching while providing quality didactics/conferences and educational resources that address future clinical and business practices) and patient diversity (eg, ensuring residents are exposed to a diverse group of patients). Although all clinics are limited in the spectrum of patients they serve (insurance status, geography, etc), efforts can be made to adjust patient panels to include a broader range of patient illnesses and limit redundancy.[14] Experiencing a functional clinic (patient volume, workflow, etc) with an appropriate patient load may influence interest. Models maximizing use of physician-specific knowledge and skills that minimize physician completion of tasks that can be performed by other members of the health care team may lead to improved recruitment.

Our findings help support a framework for understanding future GIM career interest as it relates to continuity clinic. The survey tool and our factor analysis emphasize trainee satisfaction with clinical experiences in the context of personal satisfaction. Social Cognitive Career Theory posits that career decisions stem from experiences yielding personal success, positive affective reactions while completing tasks, and exposure to successful role models.[15] If continuity clinic influences resident career choice, then the results support such a model. Understanding the mediators of satisfaction within the clinical environment and their relative importance is an important future direction of research. Similarly, satisfaction in the personal experience domain is likely informed by personal success and positive affective reactions from colleagues, patients, and preceptors. The degree to which each has a role and in what context is another important area of future research.

Our study has several limitations. First, we captured cross-sectional data allowing us to generate correlative but not causal relationships. There may have been factors beyond continuity clinic that influenced GIM interest (including prior interest in GIM), and prospectively assessing residents is an important next step. Additionally, we were unable to capture actual resident career choice, making it difficult to assess if resident perception of impact is correlated with future career choice. Also, our response rate was moderate, leaving the possibility that those who completed the survey may have been systematically different from those who did not. Although the percentage of residents interested in the various career paths is representative of national career paths, there may have been other unmeasured differences. While we used a validated survey, we did not validate our researcher-designed questions and cannot ensure that there was consistent interpretation of the questions regarding career choice. We collected data from a single training program and our results may not be applicable to other programs. Additionally, most of our residents choose their continuity site and this may have influenced their responses. Finally, we collected data over multiple years and during that time, various clinic innovations occurred that likely altered resident perceptions of the continuity clinic experience.

Conclusions

We report a significant association between higher satisfaction with the continuity clinic experience and interest in pursuing a GIM career. Further prospective

data are needed to assess if improving the learning environment, clinic operations, work/life balance, and personal satisfaction of residents leads to increased pursuit of generalist careers.

References

1 Starfield B, Shi L. Policy relevant determinants of health: an international perspective. *Health Policy.* 2002;60(3):201–218.
2 Macinko J, Starfield B, Shi L. Quantifying the health benefits of primary care physician supply in the United States. *Int J Health Serv.* 2007;37(1):111–126.
3 Cooper RA. Weighing the evidence for expanding physician supply. *Ann Intern Med.* 2004;141(9):705–714.
4 Brotherton SE, Rockey PH, Etzel SI. US graduate medical education, 2004–2005: trends in primary care specialties. *JAMA.* 2005;294(9):1075–1082.
5 Data and reports. National Residency Match Program website. http://www.nrmp.org/data/index.html. Accessed May 24, 2011.
6 West CP, Popkave C, Schultz HJ, Weinberger SE, Kolars JC. Changes in career decisions of internal medicine residents during training. *Ann Intern Med.* 2006;145(10):774–779.
7 Garibaldi RA, Popkave C, Bylsma W. Career plans for trainees in internal medicine residency programs. *Acad Med.* 2005;80(5):507–512.
8 Roth LM, Severson RK, Probst JC, et al. Exploring physician and staff perceptions of the learning environment in ambulatory residency clinics. *Fam Med.* 2006;38(3):177–184.
9 Sisson SD, Boonyasai R, Baker-Genaw K, Silverstein J. Continuity clinic satisfaction and valuation in residency training. *J Gen Intern Med.* 2007;22(12):1704–1710.
10 Cannon GW, Keitz SA, Holland GJ, et al. Factors determining medical students' and residents' satisfaction during VA-based training: findings from the VA Learners' Perceptions Survey. *Acad Med.* 2008;83(6):611–620.
11 Serwint JR, Feigelman S, Dumont-Driscoll M, et al. Factors associated with resident satisfaction with their continuity experience. *Ambul Pediatr.* 2004;4(1):4–10.
12 Horn L, Tzanetos K, Thorpe K, Straus SE. Factors associated with the subspecialty choices of internal medicine residents in Canada. *BMC Med Educ.* 2008;8:37
13 Keitz SA, Holland GJ, Melander EH, Bosworth HB, Pincus SH. The Veterans Affairs Learners' Perceptions Survey: the foundation for educational quality improvement. *Acad Med.* 2003;78(9):910–917.
14 Young JQ, Niehaus B, Lieu SC, O'Sullivan PS. Improving resident education and patient safety: a method to balance initial caseloads at academic year-end transfer. *Acad Med.* 2010;85(9):1418–1424.
15 Bakken LL, Byars-Winston A, Wang MF. Viewing clinical research career development through the lens of social cognitive career theory. *Adv Health Sci Educ Theory Pract.* 2006(1);11:91–110.