

An Evaluation of Primary Care Preceptorships

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Participants and nonparticipants in a primary care preceptorship experience were compared on self-reported competencies in basic skills and performance of clinical procedures. A pre-post analysis of participating students was done, documenting the effect of the preceptorship experience on the students' career choices, practice site selections, and competencies in basic skills and in performance of clinical procedures. The experience tended to give precepting students more than nonprecepting students a feeling of confidence in skill areas and in performance of clinical procedures.

During the past decade a concerted effort has been made nationally to increase the number of primary care physicians. This emphasis has been made due to a critical shortage of health-care manpower, especially in rural areas. Scholarship programs, loan forgiveness programs, and incentives for satisfying military obligations are now available to medical students and physicians who will agree to practice in an underserved area. Problems have surfaced with these programs which have further caused a high turnover rate in communities suffering a physician shortage.

One method for enticing medical students to enter a field of primary care has been through preceptorship programs. These programs allow medical students to train with a practicing physician away from the medical center. In addition to exposure to primary care, many of the students participating in these programs are also exposed to rural medicine. The Uni-

versity of Utah College of Medicine's Primary Care Preceptorship Program was established in 1972 through a grant from the Department of Health, Education and Welfare,* to increase the number of medical students who have firsthand experience in primary care. It was designed to attract junior and senior medical students into primary care and also into rural practice. In addition, the program is directed toward teaching students the practical applications of medicine.

The preceptorship program is in its fifth year. It involves the departments of family medicine, internal medicine, and pediatrics, and has preceptorships in 13 states. Approximately 80 junior and senior medical students annually are placed with practicing physician preceptors. At least half of them participate in a rural preceptorship, while the remaining students are involved in an urban preceptorship. Academic credit is given for the four-week elective experience.

Purpose of Study

The purposes of this study were twofold: first, to determine what

effect the preceptorship had on participants' career choices, preferences for location of practice (rural vs urban), and perceived competencies to perform defined clinical and practical medical skills and procedures; secondly, to compare preceptorship participants' perceived competencies to perform defined medical tasks with the perceived competencies of nonpreceptorship students. Specifically, the following research questions were posed:

1. What are the career preferences and choices of practice location of upper classmen in medical school who participated in the Primary Care Preceptorship Program?

2. Is there a relationship between the precepting student's preference for size of eventual practice site and the size of his/her hometown?

3. Is there a significant difference in students' perceptions of ability to perform certain medical skills and procedures after participating in a primary care preceptorship?

4. Is there a significant difference between preceptorship students' and nonpreceptorship students' perceptions of competence in performing certain medical skills and procedures?

Methodology

Subjects for the study were 87 junior and senior medical students enrolled during the 1974-1975 and 1975-1976 academic years. Fifty-six or 64.4 percent of these students were participants in a four-week primary care preceptorship. The majority (83.9 percent) took family practice preceptorships though seven students (12.5 percent) took pediatric preceptorships and two (3.6 percent) internal medicine preceptorships. The 31 nonpreceptorship students anticipated a non-primary care career in such fields as research, academia, or a subspecialty.

The perceived competencies of preceptorship and nonpreceptorship students in performing various clinical and practical skills were assessed using an inventory developed under the auspices of the Primary Care Preceptorship Advisory Committee. Committee membership represented the areas of family practice, internal medicine, surgery, and pediatrics. Preceptor and student representatives also served on that committee. Departmental faculty members and a preceptor were

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Table 1. Precepting Students' Career and Practice Location Preferences

Career Choice	Practice Location Choice					
	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Family Practice	10	83.3	20	46.5	30	54.5
Other (Surgery, Internal Medicine, Pediatrics, Obstetrics/Gynecology)	2	16.7	23	53.5	25	45.5
Total	12	100.0	43	100.0	55*	100.0

*Total is 55 since one case was unsure as to size of practice location.

Table 2. Significance in Seven Skill Areas Between Pre and Post Preceptorship Scores

Skill Area	No. of Skill Items	Wilcoxon Z	P
General Physical Skills (Surgery-Clinical)	22	5.83	.001
Office Management	8	5.52	.001
General Physical Skills (Pediatric-Clinical)	15	5.46	.001
General Physical Skills (Ob/Gyn-Clinical)	14	4.67	.001
General Psychosocial Skills	12	4.07	.001
General Physical Skills (Adult-Clinical)	8	3.50	.001
Problem Management	4	2.57	.01
Total	83		

Table 3. Significance in Seven Skill Areas Between Preceptorship and Research Groups

Skill Area	No. of Skill Items	Wilcoxon Z	P
General Physical Skills (Pediatrics-Clinical)	15	3.16	.001
General Physical Skills (Ob/Gyn-Clinical)	14	1.91	.05
General Physical Skills (Surgery-Clinical)	22	1.58	.11
Problem Management	4	1.46	.14
Office Management	8	1.22	.22
General Physical Skills (Adult-Clinical)	8	1.20	.22
General Psychosocial Skills	12	.95	.33
Total	83		

invited to submit a list of basic clinical and practical skills physicians generally perform. These skills were then reviewed by the committee to determine if they were realistic and viable. By consensus, 83 separate skills were agreed upon and grouped into seven categories: psychosocial skills, physical skills (adult), problem management, pediatrics, surgery, obstetrics/gynecology, and office management. Additional questions were asked of the preceptorship students to obtain information on career choice and preference of practice site location.

Reliability data and the refinement of the instrument resulted from a pilot study. A split-half reliability coefficient of .98 was obtained. The degree of competency students felt they had to perform a skill was determined on a five-point scale.

Nonparametric tests were employed to test the research questions. The chi-square tests were used to test questions one and two, since the data were categorical. The Wilcoxon Signed Rank Test was used to test question three while the Wilcoxon Rank Sum Test was used to test question four. Responses of students as to the degree of competency in performing defined skills were considered to be ordinal. Significance was determined at $P < .05$.

To allow other institutions to use the outlined evaluation program, a specific computer program was written enabling all data tabulations to be easily read. Inventory responses were precoded so that key punching could be done directly from the forms.

Results

Family Practice was the preferred career choice of the majority of precepting students (Table 1). A significantly higher proportion of students anticipating a rural practice opted for this career choice ($t = 2.27$; $P < .05$).

Student career preferences did not significantly change after participation in preceptorship training. Comparison of their pre vs post responses showed that only 4 of the 56 students changed their career plans after preceptorship training. Two students changed from internal medicine and "don't know" to family practice; two from family practice changed, one into surgery and one into internal medicine. All other career choices were stable.

The size of the community in which to precept was chosen by the

students. Rural preference was defined as practice in communities with less than 10,000 population. The effect of the preceptorship experience on student preference for rural vs urban practice was studied two ways: post preceptorship responses were examined and the stability of choice was determined by comparing pre and post preferences. Following participation in a preceptorship, 43 or 76.8 percent of the participants indicated they preferred an urban practice; 12 or 21.4 percent expressed preference for a rural practice with one student (1.8 percent) undecided. Student preference for urban practice was highly significant ($\chi^2 = 17.48$; $P < .001$).

No significant difference in choice of practice location occurred when comparing pre vs post responses. The choices, being basically identical, were stable. Only six students changed their responses, three from urban to rural and three from rural to urban. Students from rural communities planned to practice in rural areas, while students with urban backgrounds planned to eventually practice in an urban setting ($\chi^2 = 10.123$; $P < .001$).

The preceptorship experience seemed to have an effect upon students' perceived abilities to competently perform basic clinical and practical skills. A comparison of the pre and post perceptions in all of the seven defined skill areas showed a significant increase. The Wilcoxon Signed Rank Test Z scores (Table 2) were significant beyond the .05 level.

The results of preceptorship and nonpreceptorship student perceived competencies in performing basic clinical and practical skills are shown in Table 3. Significant differences favoring preceptorship students were found in the categories of Pediatrics-Clinical ($P < .001$) and Obstetrics/Gynecology-Clinical ($P < .05$).

Differences between the students on each of the 83 individual skills were also tested. The preceptorship group scored significantly higher ($P < .05$) than the nonprecepting group on 28 of the 83 skill items such as: perform urinalysis, interpret an ECG, diagnose and manage acute otitis media, cast a fracture, or perform an infant circumcision. Only two of the 83 scores — performing hypnosis and endotracheal intubation — were significantly higher ($P < .05$) for the nonprecepting students.

Conclusions

The following conclusions were drawn from an analysis of the findings:

1. The choice of career and practice site location seemed to be determined by medical students independent of the effect of a preceptorship.

2. A relationship seemed to exist between student choice of family practice and rural practice site location.

3. The size of a student's hometown appeared to be a good predictor of student's preferred size of practice site location.

4. A primary care preceptorship seemed to have an impact on students' self-reported competencies in performing certain medical skills and procedures.

5. A preceptorship experience tended to give precepting students a greater feeling of confidence in performing clinical skills than nonprecepting students.

Implications

The research conducted on the preceptorship program should help medical schools in determining objectives for preceptorship programs, in addition to answering questions on when preceptorships should be taken to meet the respective objectives. This research documented that most of the primary care sample had decided before their clinical years to pursue primary care. Schools then concerned with exposing students to primary care as a mechanism for recruitment should perhaps consider having shorter exposure-type preceptorships during the first two years of medical school. Another issue is that if, in fact, preceptorships increase students' self-reported competence in performing medical skills, should they not indeed be required of every medical student?

A last concern is directing efforts toward recruiting students into medical schools from rural areas in order to alleviate the rural physician shortage. Rural background correlates highly with anticipated rural practice location, especially for students going into family practice. A word of caution must be given, however; this study is based on student preference, not on actual career and practice site selection. Longitudinal data must be collected to verify the results.