Do Required Preclinical Courses With Family Physicians Encourage Interest In Family Medicine?

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Background: Many medical schools, including the University of California, San Francisco (UCSF), added required preclinical course work with family physicians in the 1990s. We examined whether current UCSF students interested in family medicine noted more contact with family physicians and more faculty support of their interest than current Stanford students and 1993 UCSF students, neither of whom had required preclinical course work with family physicians. Methods: A questionnaire was administered to students interested in family medicine at UCSF and Stanford in February 2001, with response rates of 84% and 90%, respectively. Previously published 1993 data from UCSF were also used for comparison. Data were analyzed using chi-square and t statistics as appropriate. Results: UCSF students in 2001, despite exposure to required preclinical course work with family physicians, did not perceive greater contact with family physicians than Stanford students. Stanford students perceived greater encouragement from their family medicine faculty but less from faculty overall, compared with 2001 UCSF students. UCSF students in 2001 perceived no more overall faculty encouragement than did UCSF students in 1993. Conclusions: Required preclinical course work with family physicians was not consistently associated with greater student perception of faculty support for students' interest in family medicine, nor was it demonstrated to increase the amount or quality of interested students' interaction with family medicine faculty.

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Recent declines in the proportion of medical school graduates choosing to enter careers in family practice have refocused attention on strategies to encourage students to pursue the specialty.1,2 Previous research has characterized medical schools as a "chilly" environment for primary care,3 in which students are frequently discouraged from selecting family medicine.4,6 In the 1990s, many medical schools changed their preclinical curriculum to include family physicians as lecturers, course directors, and small-group leaders.7-13 Since medical students interested in the specialty receive the bulk of their encouragement from family medicine faculty,6 such changes might increase opportunities for interested students to receive support from faculty working in family medicine. Moreover, some have suggested that increasing family medicine faculty presence in curricular activities could influence the culture of the medical school by expanding other faculty members' knowledge of the specialty and subsequently decreasing the discouragement that students interested in family medicine perceive from faculty of other specialties.3,13,14

This observational study compared the perceptions of encouragement and discouragement by students who participated in a revised preclinical curriculum to two groups of students that participated in more traditional preclinical curricula. The first comparison was between students interested in family medicine at the University of California, San Francisco (UCSF) and Stanford University in 2001. At UCSF, faculty revised their preclinical curriculum in 1995 as part of the Interdiscipli-
nary Generalist Curriculum (IGC) Project, a Health Resources and Services Administration (HRSA) seed grant to develop longitudinal preclinical courses on basic “doctoring” skills with codirectors from family medicine, pediatrics, and general internal medicine. At UCSF, 10% of the preclinical curriculum became devoted to a 2-year longitudinal course that included lectures, small-group discussion, physical examination workshops, and preceptorships with generalists. Approximately one third of the faculty were family physicians. Since family physicians served as course directors and lecturers, all students were exposed to them. The remainder of the preclinical curriculum was the traditional basic science courses and introduction to clinical medicine.

Stanford has similar preclinical courses but, unlike UCSF, continues to have minimal involvement by family medicine faculty. In addition, Stanford resembles UCSF in that both share high national standings, prominent research programs, and a similar geographic location. A required clinical clerkship focusing on outpatient family medicine exists on both campuses.

This study surveyed students interested in family medicine at both Stanford and UCSF regarding their perceptions of medical school faculty attitudes toward the specialty. Our first hypothesis was that students at UCSF, whose curriculum includes required preclinical course work with family physicians, would report more contact with family physicians and greater encouragement regarding their interest in family medicine than would students at Stanford.

The second comparison was between students at UCSF before and after the IGC Project. The 1993 UCSF curriculum consisted of basic science courses, introduction to clinical medicine, and almost no involvement of family medicine. We were thus able to compare responses before and after the curricular changes. Our second hypothesis was that current UCSF students would describe greater encouragement and less discouragement of their interest in family medicine than students in 1993 because of the increased preclinical course time with family physicians.

Methods

Subjects

Our target population was students who had ever been interested in family medicine at UCSF and Stanford medical schools. After obtaining approval from the Committee on Human Research at both institutions, surveys were sent to students in all classes who had demonstrated an interest in family medicine either by attending family medicine interest group events or by contacting the department about electives. A total of 167 students at UCSF and 105 at Stanford were thus identified.

Survey Procedures

In an average year, UCSF admits 150 students, and Stanford admits 86. Completion of the survey was encouraged by sending $10 gift certificates to students who returned the survey. Surveys were first sent out in February 2001, with three subsequent mailings to nonrespondents until June. The response rate was 84% at UCSF and 90% at Stanford. Some students reported that they had, in fact, never considered specializing in family medicine; these students were asked only to complete the demographic questions. This left a sample of 122 students at UCSF and 83 at Stanford.

Survey Instrument

The survey included questions about each student’s demographics and class status. Students completing a 5-year or longer program were classified based on the year of the traditional 4-year curriculum that most closely matched their status.

Students were asked whether they could recall anyone making especially positive or negative comments about their interest in family medicine or the specialty in general. They also indicated which specialties tended to encourage or discourage their interest in family medicine. In addition, there were several Likert-type questions, which asked students to mark a response on a scale of 1–5 or 1–4. Students rated the reaction of overall faculty and family medicine faculty to their interest in family medicine, with 5 being “encouraging” and 1 being “discouraging.” On similar scales, students rated their level of contact with family medicine faculty as compared to other faculty and their perception of family physicians’ work satisfaction.

In addition, the present UCSF data were compared with data from a 1993 UCSF survey that applied a 12-item questionnaire exactly matching the first 12 questions of our 2001 survey. Finally, students were asked to report, in open-ended fashion, positive and negative responses to their interest in family medicine.

Data Analysis

Comparisons were performed among the three groups (1993 UCSF, 2001 UCSF, and 2001 Stanford) in two different ways: including students from all class years and including only the preclinical students. Our primary hypothesis was to compare students in all 4 years because the new curriculum at UCSF had been in place long enough by 2001 that all students had participated. We examined the preclinical students alone to determine whether the new curriculum resulted in temporary differences that disappeared by the time students had entered their clinical years.

We used a chi-square analysis for categorical outcomes and t test for continuous or ordinal outcomes. When all three samples were compared, ANOVA was used for continuous or ordinal outcomes. Results were
considered statistically significant if the two-tailed $P$ value was less than .05. Data were entered into Epi-Info (Version 6, Centers for Disease Control and Prevention, Atlanta, GA 30341-3717. 770-488-8440) and analyzed using STATA (Version 7, Stata Corporation, College Station, TX 77845. 800-782-8272).

Students’ answers to open-ended questions were read as a whole by two separate researchers who identified salient themes and assigned them to categories. Some comments were assigned to multiple themes. Disparities were resolved by discussion.

Results

Table 1 shows the age, gender, and class of the Stanford and UCSF students surveyed in 2001; these data are also displayed for the UCSF students surveyed in 1993. A greater proportion of the 1993 UCSF group were men; otherwise, the groups surveyed were similar.

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<tr>
<th>Profile of Students in Each Sample</th>
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<td>-------------</td>
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<tr>
<td>Age (mean and SD)</td>
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<tr>
<td>Gender (% female)</td>
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<td>Class</td>
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<td>Second year</td>
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<td>Third year</td>
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<td>Fourth year</td>
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UCSF—University of California, San Francisco
SD—standard deviation

**Interested Students’ Perceptions of Family Medicine Faculty**

There was no significant difference between 2001 UCSF and Stanford students’ perceived level of contact with the family medicine faculty for both all students and for the preclinical subgroup. On a 1–4 scale (4=much more contact than other faculty), the mean rating of faculty contact was 2.6 for UCSF students in 2001 and 2.5 for Stanford students ($P=.36$). Among preclinical students, the mean rating was 2.7 at both Stanford and UCSF.

Students on both campuses rated family medicine faculty as supportive of their interest. However, on a 1–5 scale (5=encouraging), Stanford students as a whole perceived more encouragement than did UCSF students (mean scale 4.4 versus 4.0, $P=.01$). A similar but nonsignificant trend was found between the preclinical subgroups (4.2 versus 3.7, $P=.06$). Finally, in response to questions about whether they perceived family physicians to be happy in their specialty, Stanford students rated their family medicine faculty as significantly happier than did UCSF students (mean scale=3.5 versus 3.3, $P=.02$ on a 1–4 scale: 4=very happy in specialty). A similar, nonsignificant trend was found among the preclinical students (mean scale=3.5 versus 3.3, $P=.09$).

**Response of Overall Faculty to Student Interest in Family Medicine**

In 2001, the degree of encouragement regarding interest in family medicine that students perceived from overall faculty (all specialties, including family practice) was significantly higher at UCSF than at Stanford. On a 1–5 scale (5=encouraging), the mean was 3.5 at UCSF and 3.2 at Stanford ($P=.02$) for all students. This difference was even more notable among the preclinical students (3.7 versus 3.2, $P=.01$). There were no sign-

ificant differences between Stanford and UCSF in the percentage of students who recalled anyone making especially positive comments (73% versus 63%, $P=.16$) or negative comments (53% versus 52%, $P=.84$). Significant differences were also not apparent when examining only the preclinical subgroup (positive comments: 68% versus 56%, $P=.26$; negative comments: 44% versus 35%, $P=.38$).

At UCSF, among all students, support from overall faculty in 2001 (mean=3.5) tended to be higher than in 1993 (mean=3.3) ($P=.14$), but this difference was not statistically significant. There was also no significant difference in perceptions of encouragement among the preclinical subgroup (3.8 versus 3.7, $P=.47$). The proportion of students who recalled anyone making especially negative comments decreased from 64% in 1993 to 52% in 2001 ($P=.04$). However, there was also a decrease in students recalling anyone making especially positive comments from 80% to 63% ($P=.002$). Among the preclinical subgroup, there was no significant change in the percentage of students recalling negative comments (40% versus 35%, $P=.53$). There was a significant drop in the percent of preclinical students who could recall positive comments (79% versus 56%, $P=.01$).

Some patterns were consistent between both schools and years. Pediatrics, psychiatry, and the preclinical course leaders were consistently rated as the most encouraging of student interest in family medicine (Figure 1). Faculty from surgery and, to a lesser degree, the subspecialties of internal medicine, were consistently reported to be discouraging. General internal medicine faculty gave a mix of positive and negative feedback.
Content of Faculty Response to Student Interest in Family Medicine

Students described the responses they received about their interest in family medicine. Common themes of discouragement are listed in Table 2. The themes were similar at both schools and both years. Eight UCSF students in 2001 reported one unique theme that did not emerge in other data. They described faculty stating that primary care was encouraged too much. One student recalled, “An attending surgeon told me that UCSF tries to force students into primary care where we’ll be ‘wiping runny noses for the rest of our lives.’”

Discussion

During the conception of this study, we expected 2001 UCSF students interested in family medicine to describe the most encouragement, partly because we thought they had the most contact with family physicians. The current UCSF curriculum, which includes substantial required preclinical time with family physicians, was assumed to allow students greater contact with family physicians than the curriculum at Stanford, which has only electives in the preclinical years. We were surprised that current UCSF and Stanford students reported similar levels of contact. It is possible that UCSF students underestimated their contact because they were unaware of which preclinical lecturers and small-group leaders came from family medicine departments. However, it is also possible that the Stanford students had similar levels of contact with family physicians through taking preclinical electives with “off-campus” faculty. This survey only included students with an interest in family medicine. These students may not perceive greater contact when there is required course work, as this may replace electives they would have chosen otherwise.

Previous research suggests that the quality of interaction that students have with a family physician may be more important than the quantity.\(^\text{15}\) Moreover, a preceptor’s enthusiasm for his/her work may be a critical influence on the student.\(^\text{16}\) particularly for the students who will eventually match in primary care.\(^\text{15}\) Thus, we felt it was essential to examine the quality of the contact that students had with family medicine faculty. In this survey, Stanford students rated their family medicine faculty as significantly more encouraging of their interest in family medicine and significantly happier in their specialty than UCSF students described their faculty to be, although the absolute differences in these ratings were not large. Thus, despite less required course work with family physicians, Stanford students perceived no less contact and, indeed, better quality contact with their family medicine faculty than did their UCSF counterparts.

Table 2

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<th>Content of Negative Comments About Family Medicine as a Specialty Choice</th>
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<td>Total Responses*</td>
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<td>Specialty is too broad/physician cannot be an expert</td>
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<tr>
<td>Specialty is not intellectually stimulating</td>
</tr>
<tr>
<td>Student is “too smart” or would “waste their education”</td>
</tr>
<tr>
<td>Family physicians are overworked/underpaid</td>
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<tr>
<td>Family physicians are underappreciated</td>
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* Total number of students’ comments reflecting a theme (both campuses, 2001)
Differences were also detected in students' overall perception of medical school faculty. UCSF students in 2001 perceived more encouragement for their interest in family medicine from the faculty overall (all specialties, including family practice) than did students at Stanford. Since the increased curricular time at UCSF was not associated with a greater perception of contact with family physicians, this suggests that UCSF faculty in other specialties may have been more supportive of family medicine when compared to Stanford faculty. The difference between campuses in perceived faculty support was greatest among the preclinical students, for whom the required curricular time is most different. These results might be interpreted to suggest that increased curricular time could improve the attitude of overall faculty toward family medicine. Mitigating this conclusion, however, is our finding that overall faculty encouragement did not increase at UCSF from 1993 to 2001, after the required preclinical course work with family physicians had been added. The biggest difference between 1993 and 2001 at UCSF was that memorable episodes of both encouragement and discouragement decreased substantially. We interpret these differences to mean that family medicine may have become a more accepted and mainstream option for medical students; faculty may have felt less need to either advocate or discourage student interest in family medicine. Thus, our data provide only weak support that increased curricular time can improve the "chilly" environment for primary care described by Block and colleagues.3

The results of this study suggest some mild positive effects on the overall educational climate when family medicine plays a greater role in the required curriculum, but it also highlights some possible negative effects. In particular, our results suggest that it may not increase interested students’ contact with family physicians, especially if such exposure is already available through electives. Further, increased requirements may dilute the opportunities for truly interested students to develop important mentoring relationships with family medicine faculty, insofar as a limited pool of enthusiastic, high-quality family medicine faculty may be required to shift their time and energy to required courses for the whole student body. Thus, family physician involvement in required preclinical courses, while having some positive effects on the overall medical school culture, may not improve experiences for the students who are most likely to enter family medicine.

Consistent over time and between schools was the finding that surgery and the medical subspecialties were perceived by students to be the most discouraging, while pediatrics and psychiatry were perceived as the most encouraging of family medicine. The consistency of these findings suggests that the comments to students resulted from the characteristic beliefs and attitudes in these specialties, rather than the particular mix of individuals representing each specialty at either institution. In addition, the most common criticisms of family medicine disparage the value of mastering connections between broad bodies of knowledge, holding up instead an ideal that students should strive to know a large amount about a small area. Discouragement of family medicine thus appears to relate both to the nature of family medicine and the specialties making disparaging comments.

Other research has suggested limited effects of preclinical curricular changes. Several studies have noted that clinical clerkships, but not preclinical courses in family medicine, can increase the number of students entering the field.27,22 Our results are consistent in that they also suggest only weak effects from changing preclinical curriculum. In addition, previous research has noted that overall students' perception of faculty support for primary care may not affect their degree of interest. In a national survey of medical schools, Block noted that schools with strong primary care missions are able to communicate their support of primary care to their students, but the students' own regard for primary care is not higher.23 Thus, the perceived encouragement from general UCSF faculty may or may not increase the number of students that pursue a career in family practice.

Several important aspects of the curricular change are not addressed by our study. We did not survey students who never had an interest in family medicine. These students were excluded because previous research at UCSF showed that few medical students match in family practice who were not already interested at the time they entered medical school.24 It is possible, however, that the new curriculum resulted in students becoming interested in the specialty who were missed by our survey. Even students who did not become interested in entering the specialty may have developed more-positive attitudes toward family medicine because of the curricular change that they will project to other students in the future. Alternatively, these students might have adopted the negative attitudes toward family medicine conveyed by specialists who resented the loss of curricular time to family medicine. This interpretation is supported by both students' open-ended responses and other research on increasing primary care in the curriculum.25,26 Finally, the increased time that family physicians spend on interdisciplinary course committees may improve other faculty members' attitudes toward family medicine in ways that are not noticeable to students. For example, one study has noted increased leadership by generalists in medical schools after adding such course work.10
Limitations

Our data have many limitations. Other changes occurred at UCSF from 1993 to 2001, and transformations in family medicine and medical education in general occurred during this period. For example, general regard for primary care increased in the 1990s, and our results could be confounded by this temporal trend. In addition, there are differences between UCSF and Stanford other than curricula. Stanford is a smaller, private school, and its required third-year family medicine clerkship is very popular. Also, we looked at students at only two similar, research-oriented, California medical schools and cannot assume that our results generalize to medical students elsewhere. Finally, these data do not ascertain whether encouragement and discouragement to students actually affected their specialty choice.

Conclusions

While acknowledging these limitations, we believe that our study may offer lessons for medical school faculty who wish to encourage students to pursue careers in family practice. Faculty should not necessarily assume that more required exposure to family medicine is always better or that greater representation in the required curriculum necessarily means more faculty contact with those students most interested in family medicine. In fact, our findings reinforce that we should pay at least as much attention to the quality of students’ exposure to family medicine as to the quantity. Careful consideration should be given to the potential effects of curricular changes that require family physician faculty to devote more time to students who are not interested in family medicine. Finally, our data add to the large body of research suggesting that the values of primary care can lead to tension with specialties that emphasize other values. As educators in family medicine, we should continue to strive to set an example of collegiality as we interact with physicians of other specialties.

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