



Association Between Interest Group Participation and Choice of Residency

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BACKGROUND AND OBJECTIVES: While medical student interest groups (IGs, also known as student clubs) are widely offered, their actual use and effectiveness to affect students' specialty choice (eg, increase selection of family medicine) are poorly understood. We performed this study to describe student participation in IGs, association with specialty selection, and perceived benefit of participation.

METHODS: An electronic, cross-sectional, quantitative survey of all fourth-year US medical students in 2009 with a Department of Defense service obligation was conducted. Each participant indicated which of 18 listed IGs they attended with a yes or no response. Each participant also rated the overall benefit of IGs on a 9-point scale and provided their top choice for the residency Match.

RESULTS: The response rate was 53% (419/797). Students attended an average of 3.5 specialty IGs. For all 18 specialties queried, IG attendance was associated with selection in the Match, and 77% of students attended the IG of their selected specialty. However, IG participation was perceived as having a small effect on specialty choice, as the mean response was 3.6 (standard deviation=2.4) on a 1 to 9 scale.

CONCLUSIONS: IG participation is common and is strongly associated with specialty choice, but the benefit appears to be small.

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Understanding why medical students select their specialty is increasingly important in the current health care climate. Many factors have been implicated, including lifestyle considerations, financial remuneration, personal satisfaction, prestige, role models, quality of faculty, and clinical experience.¹⁻⁷

Student interest groups (IGs, sometimes referred to as student clubs) are one strategy used by various specialties (particularly family

medicine and internal medicine) in an attempt to improve recruitment and retention within a given specialty.⁸⁻¹³ However, there is scant evidence to support this aim. One single institution study using a focus group design found themes of "maintain interest" among students leaning toward family medicine and "dispelling negative myths" for students considering family medicine.¹¹ While one older study found an association with family medicine interest groups and Match rates in family

medicine,⁹ this was not replicated on a follow-up study.¹³ The only data directly from students comes from the Association of American Medical Colleges (AAMC) graduation survey, where in 2010 40% of students stated that IGs had no influence on their specialty choice, and only 6% described major influence.¹⁴ Overall, the mean response was equivalent to "minor influence" (mean 0.9 on a 0 to 3 scale).¹⁴ There are no controlled trials in the literature describing the effect of IGs on Match rates.

Thus, the scope and effect of student participation in interest groups is largely unknown. In particular, it is not known if participation in interest groups influences selection of internal medicine and family medicine, the two specialties with the most available literature on this topic. We sought to describe (1) students' overall participation in interest groups, (2) interest group participation by specialty, (3) the association between participation and specialty selection in 18 pre-specified specialties (including family medicine and internal medicine), and (4) the students' perceived effect of interest group participation on residency selection.

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Methods

Study Design and Sampling Framework

The study was a cross-sectional, quantitative survey of all fourth-year medical students who were applying for residency training within the Military Healthcare System and is previously described in detail elsewhere (to include the entire questionnaire).¹⁵ All fourth-year US medical students with a service obligation to the US Army, US Navy, or US Air Force were eligible to participate. All students attended a US allopathic or osteopathic medical school under at least one of the following programs: matriculation in the Uniformed Services University in Bethesda, MD (an allopathic medical school), participants in the Health Professional Scholarship Program (HPSP, a national military scholarship program for medical school, whereby students can attend the allopathic or osteopathic medical school of their choice with military funding and then fulfill a service obligation), or had military service obligations from their undergraduate education (military service academy or Reserve Officer Training Corps). This national sample of allopathic and osteopathic students' e-mail addresses was obtained via each service's graduate medical education office. On April 23, 2009 (after the military residency Match but prior to medical school graduation), students were contacted via an e-mail containing an invitation to participate and the link to the Web site hosting the survey. Students were reminded via e-mail to participate twice prior to survey closure on June 14, 2009.

Questionnaire

The overall questionnaire was developed to better understand contributing factors associated with specialty choice, with one portion containing questions regarding interest group (IG) participation. In this section, all students were asked to indicate, with a yes or no response, if they

attended an IG in each of 18 specialties (listed in order of appearance on the questionnaire): general internal medicine, general pediatrics, family medicine, emergency medicine, general surgery, dermatology, ophthalmology, radiology, anesthesia, orthopedics, psychiatry, pathology, neurology, physical medicine and rehabilitation, urology, otolaryngology, neurosurgery, and obstetrics-gynecology. These 18 specialties were not an exhaustive list of all possible specialties but rather represented the specialties that have been historically the most commonly selected specialties in the military Match. Students were also asked "Regarding your overall impression of interest groups: What effect did attending any interest groups have on your choice of specialty?" A 9-point Likert scale, anchored by "No Effect" on the far left, "Some Effect" in the middle, and "Large Effect" on the far right, was provided for response. Another section inquired about medical students' preferred specialty for residency training, even if they were not ultimately selected, as well as the timing of their decision to choose their preferred specialty (prior to medical school, during basic science years, while rotating on the clerkship during the core clerkship year, while on another clerkship during the core clerkship year, or after the core clerkship year). Finally, students were asked for demographic information including age, gender, marital status, presence of children, type of medical school, and education debt for themselves and their spouse. To help maintain anonymity of the respondents, the survey contained no space to list the individual medical school, except for the Uniformed Services University.

Data Analysis

Among respondents to the overall questionnaire, less than 10% had missing data regarding IG attendance. Of those with missing data, if the respondent answered a "yes" to attendance of at least one IG, it

was presumed that the respondent did not attend other IG, and a response of "no" was imputed for missing responses. Bivariate comparisons of dichotomous variables were analyzed using chi square. Relative risks were calculated by considering "IG attendance" as the exposure and "specialty selection" as the outcome. Spearman's test was used for correlations. *P* values of <.05 were considered significant. Analysis was performed using STATA 11.0, College Station, TX. The Institutional Review Board at William Beaumont Army Medical Center in El Paso, TX, Carl R. Darnall Army Medical Center, Fort Hood, TX, and the Uniformed Services University in Bethesda, MD, reviewed and approved the protocol. There was no external funding.

Results

The response rate was 53%, as 419 of 797 students invited to participate answered at least one question regarding IG. Overall, 447 students responded to the questionnaire, but 28 (6%) left the entire IG section blank and were excluded from this analysis. The mean age of respondents was 28 years old (standard deviation [SD]=3.1), the majority were male (64%), most were married (55%), and nearly one third had children (29%). As for medical schools, 15% attended the Uniformed Services University in Bethesda, MD, 52% attended a civilian allopathic school, and 33% attended a civilian osteopathic school.

Interest Group Participation

Nearly all students (87%, 366/419) participated in at least one IG, with a mean of 3.5 specialties attended (SD=2.8, range 0–18). IG participation rate varied according to specialty (Table 1). The most attended IG was family medicine (49%), followed by general surgery (48%), internal medicine (47%), and emergency medicine (43%). Not surprisingly, the top choice for residency Match selection closely mirrored the percentage of students who participated in each

Table 1: Specialty Interest Groups by Student Participation Rate, n=419

Specialty	Participation in Interest Group, n (%)	Selection as Top Choice in the Match, n (%)
Family medicine	205 (49)	74 (18)
General surgery	201 (48)	53 (13)
Internal medicine	196 (47)	50 (12)
Emergency medicine	179 (43)	32 (8)
Pediatrics	140 (33)	26 (6)
Obstetrics and gynecology	109 (26)	29 (7)
Orthopedics	88 (21)	28 (7)
Anesthesiology	68 (16)	32 (8)
Radiology	57 (14)	15 (4)
Psychiatry	48 (12)	18 (4)
Dermatology	45 (11)	6 (1)
Neurology	33 (8)	6 (1)
Physical medicine and rehabilitation	25 (6)	3 (1)
Neurosurgery	22 (5)	6 (1)
Ophthalmology	20 (5)	11 (3)
Urology	19 (5)	8 (2)
Otolaryngology	16 (4)	7 (2)
Pathology	13 (3)	3 (1)
Other	N/A	12 (3)

Students could attend up to 18 interest groups. Students participated in a mean of 3.5 (SD=2.8) different specialty groups.

specialty IG (Spearman's rho 0.88, $P<.0001$).

Interest Group Participation and Residency Selection

Interest group participation was associated with residency selection. For all 18 specialties, participation in the IG was strongly associated with selection of that specialty in the Match (Table 2). In four specialties (dermatology, neurosurgery, general surgery, and obstetrics and gynecology), at least 90% of the students selecting that specialty had participated in an IG in the specialty. Only three specialties (pathology, otolaryngology, and ophthalmology) had less than 50% of students selecting

the specialty participating in the IG. Of note, the survey design did not inquire if the IG existed at the students' school, which may have prevented some students from participating. Overall, 77% (312/407) students who chose one of the 18 specialties participated in the corresponding IG. Students who participated in only a single IG selected that specialty at a similar frequency (69%, 36/52).

It is interesting to note that while most students participated in the IG of the specialty they selected in the Match, relatively few students who attended an IG eventually selected that specialty. Family medicine and anesthesia had the highest

specificity, as 29% of students participating in their IG selected the specialty in the Match (Table 2). Physical medicine and rehabilitation, pathology, and neurology had the lowest retention, as less than 10% of students participating in their IGs selected the specialty.

Choice of Specialty at Selection and Interest Group Participation

On matriculation to medical school, 84% (351/419) of students indicated a top specialty choice. Of these, 68 (19%) students stated that they had already decided on this specialty prior to matriculation. Nearly all of these 68 students ($n=64$, 94%) did select this specialty for the Match, and 56 (82%) participated in the corresponding IG. Of the remaining 283 students who listed a top specialty at matriculation but were not committed to the specialty at that time, 71% (200/283) attended an IG in this specialty, but only 24% (67/283) ultimately chose this specialty. Thus, 131 students chose the same specialty in the Match that was their top choice at matriculation (64 deciding before medical school and 67 during medical school). Almost all (86%, 113/131) of these students attended the corresponding IG. For the remainder of students who selected a different specialty in the Match than at matriculation, 72% (199/276) participated in the IG of the specialty they ultimately selected, which was statistically less likely than those with the same specialty interest at matriculation and during the Match (72% versus 86%, risk difference 14%, 95% CI=6%–22%, $P<.002$). Lastly, we could not determine if 12 students participated in the IG of their specialty, as we did not ask about their specialty's IG (eg, radiation oncology, preventive medicine, flight medicine, and others).

Perceived Effectiveness of Interest Groups

Students were asked "Regarding your overall impression of interest groups: What effect did attending any interest group have on your

Table 2: Association Between IG Participation and Residency Selection, n=419

Specialty	Of Those Who Selected as Top Choice in Match, % Attending IG	Relative Risk (95% CI) of Residency Selection in the Match With IG Participation in the Same Specialty*	Of Those Who Participated in an IG, % Who Selected the Specialty
Family medicine	81	4.5 (2.6–7.7)	29
General surgery	91	10.4 (4.2–26)	24
Internal medicine	70	2.7 (1.5–4.7)	18
Emergency medicine	81	5.8 (2.4–14)	15
Pediatrics	85	11 (3.9–31)	16
Obstetrics and gynecology	93	38 (9.3–159)	25
Orthopedics	79	14 (5.8–33)	25
Anesthesiology	63	8.6 (4.4–17)	29
Radiology	73	17 (5.8–53)	19
Psychiatry	61	12 (4.9–30)	23
Dermatology	100	—	13
Neurology	50	12 (2.5–56)	9
Physical medicine and rehabilitation	67	32 (3.0–336)	8
Neurosurgery	100	—	27
Ophthalmology	36	11 (3.6–36)	20
Urology	63	35 (9.0–136)	26
Otolaryngology	43	19 (4.6–77)	19
Pathology	33	16 (1.5–161)	8

* For example, 29% of students who participated in a family medicine interest group (IG) selected family medicine in the Match, whereas only 6.5% of students who did not participate in a family medicine IG selected family medicine in the Match, RR 4.5. $P < .003$ for all comparisons.

choice of specialty?" A 9-point Likert scale was provided for response. The mean response was 3.6 (SD=2.4), which was between the anchors of "No Effect" at 1, "Some Effect" at 5 (the remaining anchor was "Large Effect" at 9). Analyzed a different way, 33% answered "No Effect" (lowest rating possible), and 4% answered "Large Effect" (the highest rating possible).

Discussion

IGs have been described as popular extracurricular activities on undergraduate medical campuses, but the extent of participation has not been described in the medical education literature. We found respondents

typically attended at least three such specialty IGs during medical school. For all specialties in our study, IG participation was strongly associated with selection of that specialty in the Match. However, the benefit of IG participation to spur interest in a specialty seemed to be small, as the overall benefit was rated between "No Effect" and "Some Effect" by our respondents.

There are several explanations why IG attendance would be associated with selection in the Match. First, most students participated in at least three IGs during medical school, suggesting that undecided students used IGs to experience the specialty, as described in one focus

group.¹¹ Second, almost all students (86%) with an interest in a specialty at matriculation attended the IG, supporting IGs' function to maintain interest as previously reported.^{10,11,13} Third, attendance might simply be perceived social pressure, as students may believe that if they are interested in a specialty, they should prove their dedication by attending the IG. One might expect this attitude to be more prevalent in procedurally oriented specialties with long hours, like general surgery, obstetrics, and neurosurgery. Indeed, we found these were three of the four specialties where >90% of students who selected these specialties in the Match attended the IG. Fourth,

participation in an IG may represent a “dress rehearsal” after their decision has been made, where students join the IG to formally involve themselves, learn cultural norms, etc. Lastly, IG participation may simply reflect the size of the department at the school, where larger departments (who have the most residency slots to fill) have the time and resources to host these activities.

What about the benefits of IG? Unfortunately, there are no prospective studies to formally address this question, leaving perceived benefit as the best available outcome. Our study found that students believe IGs have an overall small effect but are perceived as highly influential by a few students. Interestingly, our findings were quite similar to the AAMC’s graduation questionnaire.¹⁴ The 2010 survey found 40% of students said there was “no influence” and 6% had “major influence,” versus 33% and 4%, respectively, in our study.¹⁴ Similarly, the mean rating was 30% of the maximum possible score (mean 0.9 on a 0 to 3 scale), compared to 33% in ours (mean 3.6 on a 1 to 9 scale).¹⁴

With a small benefit, should IGs be continued? This becomes a benefit to cost ratio question. Previous studies in family medicine and internal medicine describe average costs of \$1,400–\$1,900 per year, respectively, to maintain these IGs.^{8,13} In addition, internal medicine faculty spent 35 hours/year to supervise the IG.⁸ Thus, while likely small, these benefits can be achieved with fairly minimal resources, suggesting it is reasonable to continue to support IGs. Prospective studies that determine the most beneficial activities with regard to Match rates would be helpful.

Our study had several limitations. First, the response rate was only 53%, but this is similar to other health care professional physician studies.¹⁶ Secondly, the survey was conducted at the end of medical school, so recall bias is certainly

possible. Additionally, all of our students had military obligations and our population had a higher proportion of males than civilian schools. Nonetheless, 85% of our respondents attended a civilian medical school, and our studies’ overall rating of the effectiveness of IG was quite similar to the AAMC graduation questionnaire,¹⁴ suggesting that our study population is a reasonable national sample of US medical students. We did not query what activities were a part of IGs, and certain activities may be more influential or more strongly associated with specialty selection. Lastly, we did not ask about the presence of IGs at each institution, so some students may have wished to participate in an IG but could not because the IG did not exist at their location. Many medical students participate in at least three interest groups during medical school, with family medicine being the most highly attended interest group. Students with pre-existing interest in a specialty are more likely to attend that specialty interest group and are more likely to select that specialty for residency training. Even without preexisting interest, there is a strong association between interest group attendance and selection of the specialty. Despite this concordance with residency choice, students ascribe only slight importance to the impact of interest groups on residency selection. Even with this small benefit, interest groups are inexpensive and seem reasonable to continue to support. Further research describing the benefits for individual students (both with and without preexisting interest) and most-useful activities are needed to improve interest groups.

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