



The R.O.A.D. Confirmed: Ratings of Specialties' Lifestyles by Fourth-Year US Medical Students With a Military Service Obligation

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BACKGROUND AND OBJECTIVES: Lifestyle factors influence medical specialty choice, but which specialties are perceived to have the best lifestyles is poorly described in scientific literature. The objective of the study was to determine the rating of specialties by lifestyle.

METHODS: All fourth-year US medical students with a Department of Defense service obligation who participated in the 2008/2009 military Match were invited to participate in a survey following the Match. The survey listed 18 specialties and asked students to rate the lifestyle of each one on a 9-point scale, and the mean score was used as the rating. Students also listed their specialty choice in the Match.

RESULTS: The response rate was 52%, as 418 of the 797 eligible students responded and provided a rating for at least nine of the 18 specialties. The four specialties rated highest for lifestyle (1–9, with 9 being highest) were dermatology (8.4), radiology (8.1), ophthalmology (8.0), and anesthesia (7.5). The four specialties rated lowest were orthopedics (4.0), neurosurgery (3.1), general surgery (2.6), and obstetrics-gynecology (2.5). Family medicine (5.7) was the top-rated primary care specialty, followed by pediatrics (5.3) and internal medicine (4.7). Students rated the lifestyle of their own specialty only slightly higher (range 0.02 to 1.8) than all other students.

CONCLUSIONS: The R.O.A.D. specialties (radiology, ophthalmology, anesthesia, and dermatology) are the top specialties with respect to lifestyle as viewed by current students. Students perceive their own specialty's lifestyle realistically. Research determining why a specialty perceived as having a lower-rated lifestyle is acceptable to some students and not others is needed.

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US medical students have been placing increased importance on lifestyle when choosing their specialty. A 2003 study showed that lifestyle explained 55% of the changing trends in specialty choice of US allopathic medical students from 1992–2002.¹ It seems intuitive that medical students' description of which specialties have a favorable lifestyle would be well known. However, this has only been described once using scientific methods.² That study, conducted by Newton et al, included more than 1,000 students from two medical schools who were to rate the importance of lifestyle in their specialty choice.² Findings indicated that lifestyle played a significant role in medical students' decisions to specialize in fields such as radiology, physical medicine/rehabilitation, emergency medicine, ophthalmology, anesthesia, urology, and dermatology, the specialties rated the most lifestyle friendly. Those students who valued lifestyle highly

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were less likely to choose specialties such as general surgery and obstetrics-gynecology, which were the specialties rated as having the most unfriendly lifestyles among this population. These ratings fell closely along the controllable lifestyle rubric, which was first described in 1989.³ In this classification system, specialties are defined as either having a controllable or non-controllable lifestyle, based on whether the career path would “allow the physician to control the number of hours devoted to the specialty.”⁴

The R.O.A.D. specialties (radiology, ophthalmology, anesthesia, and dermatology) are reported to have the best lifestyles.⁵ In recent years, students have been increasingly choosing controllable lifestyle specialties^{6,7} such as these, over primary care. Considering that high-quality primary care is strongly associated with the health quality of a population,⁸ it is vitally important to better understand the trend under which current students select controllable lifestyle specialties over primary care. Thus, the goals of this study were to (1) determine how medical students rate various specialties by lifestyle, (2) determine if medical students rate the lifestyle of their chosen specialty differently than students selecting other specialties, and (3) determine if traditional lifestyle factors (predictable hours, time for outside interests, etc) predict the rating of lifestyle by specialty.

Methods

Design and Sampling Frame

This report is from a larger cross-sectional survey of all fourth-year medical students who were applying for residency training within the Military Health Care System.⁹ All fourth-year US medical students with a service obligation to the US Army, US Navy, or US Air Force were eligible to participate. Students either attended the Uniformed Services University (USU, where all students are active duty military or public health service, are paid a monthly salary, and have

no tuition), were participants in the Health Professional Scholarship Program (HPSP, a military scholarship program for students attending civilian medical schools in the United States), or had military service obligations from their undergraduate education (military service academy or Reserve Officer Training Corps).¹⁰ This national sample of graduating medical students' e-mail addresses were obtained via the chief administrators of these programs. On April 23, 2009 (after the military residency Match but prior to medical school graduation in May/June 2009), students were invited via e-mail to participate anonymously in the survey using surveymonkey.com.[®] Students received two email reminders prior to survey closing on June 14, 2009. To be included in this study, the respondent needed to rate the lifestyle of at least nine of the 18 specialties addressed in the survey.

Questionnaire Development and Content

The main questionnaire was developed in several steps, as previously described,⁹ and included input from fourth-year medical students (the intended audience), recent medical school graduates, clerkship directors, residency program directors, and experts in medical education. The survey was revised several times using feedback from these groups and was pilot tested before the final version was adopted. One section of the questionnaire was dedicated to lifestyle, in which survey recipients were asked, “When someone says ‘That specialty has a good lifestyle,’ what does that mean to you?” and provided a text field for response. The results from that item have been previously reported.¹¹ The next items asked students to “Please rate the following specialties’ lifestyles on a scale of 1–9 with 1 being the worst and 9 being the best.” The following 18 specialties were listed (in order): family medicine, internal medicine, pediatrics, emergency medicine, general surgery, dermatology, ophthalmology, radiology, anesthesia,

orthopedics, psychiatry, pathology, neurology, physical medicine and rehab, urology, ENT, neurosurgery, and OB-GYN. For each specialty, a 9-point Likert scale was provided for response, anchored by worst at 1, average at 5, and best at 9.

In other parts of the questionnaire, students were queried for their first choice of specialty in the Match “even if you didn’t get picked up for it,” as well as up to three other specialties considered. Demographic information included age, gender, marital status, presence of children, type of medical school, and educational debt. Lastly, students were asked to what extent they agreed or disagreed with the following statements: (1) “I want to have a job with predictable work hours,” (2) “It is important that my job gives me time to pursue activities outside of work,” (3) “I chose my specialty because it allowed more leisure time,” and (4) “I chose my specialty because it allowed me to spend time with my family.” For each of these four items, a 9-point Likert scale was provided for response, anchored strongly disagree, somewhat disagree, neither agree or disagree, somewhat agree, and strongly agree on 1, 3, 5, 7, and 9, respectively.

Analysis

To compute the overall rating of the specialties’ lifestyles, the mean rating for each specialty was calculated and then sorted. Additionally, for the six specialties ranked first in the Match by 30 or more students, this rating was compared between students who ranked the specialty first in the Match versus all other students using a *t* test (eg, the rating of anesthesia by students selecting anesthesia versus all other students). No statistical comparison was made for specialties ranked first by fewer than 30 students, given the small sample size.

Specialties were classified as follows: non-controllable lifestyle (obstetrics-gynecology, general surgery, orthopedics, neurosurgery, urology); controllable lifestyle (emergency

medicine, radiology, ophthalmology, anesthesia, dermatology, psychiatry, physical medicine and rehabilitation, preventative medicine, otolaryngology, neurology, radiation oncology, and pathology);^{1,4} and primary care (internal medicine, family medicine, pediatrics, and internal medicine/family medicine combined programs with psychiatry). Students were classified as considering primary care if they had listed a primary care specialty among their three other specialties considered. The specialty choice for each student was then categorized into one of four groups: (1) controllable lifestyle/did not consider primary care, (2) controllable lifestyle/considered primary care, (3) primary care, and (4) non-controllable lifestyle. These categories were chosen *a priori*, as evidence suggests that students choose controllable lifestyle specialties over primary care specialties primarily for lifestyle reasons.¹ The mean lifestyle ratings of the primary care specialties were compared to these four categories using one-way ANOVA and Bonferroni multiple comparison tests if the F test was statistically significant.

For the four statements about lifestyle preference listed above (“predictable hours,” “outside interests,” “leisure time,” and “time for family”), the responses were dichotomized to agree versus neither agree nor disagree or disagree (ie, responses 6–9 on the scale versus 1–5). Each specialty’s lifestyle mean rating was compared between students who agreed versus did not agree with each of these four statements. The 18 absolute differences in rating for each specialty were then correlated to the overall ranking of the specialties’ lifestyles using Spearman’s rank correlation coefficient.

Finally, the mean rating for each specialty was compared to the demographic or medical school characteristics using a *t* test. If needed (eg, age, debt), the demographic characteristic was dichotomized at the median. *P* values <.05 were considered significant. All calculations were made with STATA 11.2,[®]

College Station, TX. The Institutional Review Board (IRB) at William Beaumont Army Medical Center in El Paso, TX, Carl R. Darnall Army Medical Center, Fort Hood, TX, and USU in Bethesda, MD, reviewed and approved the protocol. There was no external funding for the study.

Results

A total of 797 students were invited to participate in the survey, and 447 responded. Of these, 418 provided a rating for at least nine of the 18 specialties, yielding a response rate of 52%. The remaining 29 students had missing data for this section and were excluded from this study. The students’ top specialty selections are listed in Table 1. The students’

mean age was 28.2 (standard deviation (SD) 3.1) years, 64% were male, 55% were married, 43% were single/never married, 29% had at least one child, and the mean educational debt was \$45,000 (SD \$56,000, range \$0–\$300,000). Further, 15% attended USU, 52% a civilian allopathic school, and 33% a civilian osteopathic school.

The lifestyle ratings for each specialty are summarized in Table 2. Dermatology was the highest rated specialty (mean rating 8.4 [SD 1.2] on a 1 to 9 scale), followed closely by radiology (mean 8.1 [SD 1.2]), ophthalmology (mean 8.0 [SD 1.4]), and anesthesiology (mean 7.5 [SD 1.5]). The three lowest-rated specialties were neurosurgery, general surgery

Table 1: Top Specialty Choice in the Match of 418 Fourth-Year Medical Students With a US Military Service Obligation

Specialty	n (%)
Family medicine	74 (18)
General surgery	52 (12)
Internal medicine	50 (12)
Emergency medicine	32 (8)
Anesthesia	31 (7)
Obstetrics-Gynecology	30 (7)
Orthopedics	28 (7)
Pediatrics	26 (6)
Psychiatry	18 (4)
Radiology	15 (4)
Ophthalmology	11 (3)
Urology	8 (2)
Transitional (rotating) internship	8 (2)
Otolaryngology	7 (2)
Neurology	6 (1)
Dermatology	6 (1)
Neurosurgery	6 (1)
Pathology	3 (1)
Physical medicine and rehabilitation	3 (1)
Family medicine/psychiatry combined	1 (0)
Internal medicine/psychiatry combined	1 (0)
Preventative medicine	1 (0)
Radiation oncology	1 (0)

The specialty listed is the top choice of the student in the 2008 Military Match (for training starting on July 1, 2009), whether or not the student actually matched in the specialty.

Table 2: Rating of Lifestyles

Specialty	Rating (Mean, SD) by all Students†	Difference in Mean Rating of the Specialty by Students Who:				
		Ranked the Specialty First in the Match**	Agreed With Predictable Hours‡	Agreed With Outside Interests‡	Agreed With Leisure Time‡	Agreed With Family Time‡
Dermatology*	8.4 (1.2)	+0.4	+0.21	+0.48	+0.15	+0.24
Radiology*	8.1 (1.2)	+0.7	+0.30	+0.47	+0.15	+0.13
Ophthalmology*	8.0 (1.4)	+0.02	+0.26	+0.64	+0.13	+0.13
Anesthesiology*	7.5 (1.5)	+0.5	+0.23	+0.61	+0.08	+0.18
Pathology*	7.3 (1.7)	+1.7	+0.39	+0.52	+0.24	0
Emergency medicine*	6.9 (1.7)	+0.8	-0.09	+0.31	-0.04	-0.14
Physical medicine and rehabilitation*	6.9 (1.7)	+1.8	-0.01	+0.29	+0.16	+0.04
Psychiatry*	6.7 (1.8)	+1.2	+0.24	+0.67	+0.27	-0.01
Neurology*	5.9 (1.6)	+0.5	-0.14	+0.23	0	-0.16
Otolaryngology*	5.7 (1.9)	+1.4	+0.04	+0.12	-0.29	-0.08
Family medicine	5.7 (1.8)	+0.6	-0.12	+0.27	+0.03	-0.12
Urology	5.4 (1.9)	+1.3	-0.23	+0.11	-0.43	-0.26
Pediatrics	5.3 (1.7)	+1.0	-0.30	-0.28	-0.29	-0.12
Internal medicine	4.7 (1.7)	+0.3	-0.60	-0.22	-0.45	-0.52
Orthopedic surgery	4.0 (2.1)	+0.4	+0.08	+0.13	-0.35	-0.30
Neurosurgery	3.1 (2.1)	+0.9	-0.24	-0.09	-0.44	-0.33
General surgery	2.6 (1.7)	+1.1	-0.69	-0.83	-0.84	-0.80
Obstetrics-Gynecology	2.5 (1.6)	+0.8	-0.63	-0.31	-0.64	-0.62

* Controllable lifestyle specialties

† Students were asked to rate each specialty's lifestyle on a scale of 1–9, with 1 being the worst and 9 being the best.

** Values indicate the difference in lifestyle rating of the specialty between students who listed that specialty as the first choice in the Match (even if they weren't selected) to those who listed another specialty first.

‡ Students were asked to what extent they agreed or disagreed with the statements below and were provided a 9-point Likert scale with strongly disagree on the left, neither agree or disagree in the center, and strongly agree on the right. The responses were dichotomized to agree for all who responded to the right of neither agree or disagree. The statements were as follows:

"I want to have a job with predictable work hours."

"It is important that my job gives me time to pursue activities outside of work."

"I chose my specialty because it allowed more leisure time."

"I chose my specialty because it allowed me time to spend with my family."

For clarification, students who agreed that "I want to have a job with predictable work hours" rated dermatology 0.21 points higher than students who did not.

and obstetrics-gynecology (mean 3.1 [SD 2.1], 2.6 [SD 1.7], and 2.5 [SD 1.6], respectively). Of note, every controllable lifestyle specialty was rated higher than any primary care or non-controllable lifestyle specialty (Table 2).

Students uniformly rated the lifestyle of their selected specialty higher than all other students who didn't choose that specialty. The magnitude of this difference was generally small. For 11 of the 18 specialties, the absolute difference was less than

1 point on the 9-point scale. Students selecting physical medical and rehabilitation had the largest difference on this measure at 1.8 (Table 2). Of the six specialties selected by more than 30 students, the difference was statistically significant for four: family medicine, general surgery, obstetrics-gynecology, and emergency medicine ($P < .01$, t test). The effect size (the difference between the means divided by the pooled SD) of these ranged from 0.36 to 0.60, which is in the small to medium

range (a value ≥ 0.8 is required for a large effect size). The difference was not statistically significant for internal medicine or anesthesia.

Selection of a controllable lifestyle specialty affected the lifestyle rating of primary care specialties. Students who selected a controllable lifestyle specialty and did not consider primary care (eg, a student selecting radiology without considering any other specialty) rated the lifestyle of family medicine the lowest. Students who selected a controllable lifestyle

specialty and considered primary care (eg, a radiology student who had considered internal medicine) rated the lifestyle of family medicine higher than the former, followed by students who selected primary care, and finally students who selected non-controllable lifestyle specialties (mean 5.1, 5.3, 5.8, and 6.0, respectively, Table 3). This difference was statistically significant for students who selected primary care and those who selected non-controllable lifestyle specialties (ANOVA, $F=5.26$, $P=.001$ and $P<0.05$ by Bonferroni multiple comparison tests). This pattern was also seen for internal medicine and pediatrics (Table 3).

We explored the ratings of the specialties based on the students' opinion about lifestyle factors. Students were asked if they agreed with the following statements: "I want to have a job with predictable work hours" (81% agreed), "It is important that my job gives me time to pursue activities outside of work" (89% agreed), "I chose my specialty because it allowed more leisure time" (48% agreed), and "I chose my specialty because it allowed me time to spend with my family" (58% agreed). For all four of these items, students who agreed with them rated the highest rated specialties' lifestyles higher (dermatology) and the lower rated specialties' lifestyles lower

(obstetrics-gynecology) than those who did not agree with these statements. For example, students who agreed with "predictable work hours" rated dermatology's lifestyle at 8.48 versus 8.27 for those who did not (Table 2). For this same "predictable work hours" item, obstetrics-gynecology was rated at 2.40 for those who agreed versus 3.03 for those who did not. All four items were highly correlated with specialty lifestyle rating. The correlation between the rating of the lifestyle (eg, dermatology top rated at 8.4, radiology second at 8.1, etc) and the change in score with agreement of the "predictable work hours" item (eg, dermatology: + 0.21 with agreement, radiology: +.30 with agreement, etc) was 0.82 (Spearman's rho, $P<.0001$). Similar high correlations were seen for the other three items (outside interests: 0.87, $P<.0001$, leisure time: 0.85, $P<.0001$, family time: 0.94, $P<.0001$). For further illustration, all four items were positively correlated with the top four rated specialties for lifestyle and negatively correlated with the bottom three rated specialties for lifestyle (Table 2).

Overall, we found only a few demographic characteristics that were associated with specialty lifestyle ratings (all comparisons in this section by t test unless otherwise stated). When dividing the cohort at

the median age, younger students (age 27 or younger) did not rate any specialty's lifestyle differently than older students (age 28 or older) ($P>.05$ for all). Likewise, having at least one child did not affect the rating of any specialty ($P>.05$ for all). Women rated pediatrics (5.5 versus 5.1, $P=.013$) and radiology (8.3 versus 8.0, $P=.019$) higher than men, whereas men rated general surgery (2.7 versus 2.4, $P=.044$) and orthopedics (4.2 versus 3.8, $P=.028$) higher than women. Controlling for specialty choice by linear regression did not account for these differences (eg, women were more likely to choose pediatrics than men, but even when controlling for this factor, women still rated the lifestyle of pediatrics higher than men). When dividing the cohort by median debt (\$25,000 or less versus more than \$25,000), students with higher debt rated the lifestyles of two specialties higher: urology (5.7 versus 5.2, $P=.004$) and otolaryngology (6.0 versus 5.5, $P=.022$) and one specialty's lifestyle lower: anesthesia (7.3 versus 7.6, $P=.044$). Osteopathic students rated four surgical specialties' lifestyles higher than allopathic students: general surgery (2.8 versus 2.5, $P=.039$), neurosurgery (3.7 versus 2.8, $P<.001$), urology (5.8 versus 5.3, $P=.007$), and otolaryngology (6.0 versus 5.6, $P=.034$). Conversely, allopathic students rated two specialties

Table 3: Rating of Primary Care Specialties' Lifestyle by Student's Own Specialty Choice

		Rating of Lifestyle†		
First choice in the Match*	n	Family Medicine	Internal Medicine	Pediatrics
Controllable lifestyle, did not consider primary care	78	5.1	3.9	4.5
Controllable lifestyle, considered primary care	56	5.3	4.2	5.0
Primary care	152	5.8**	4.9**	5.5**
Non-controllable lifestyle	124	6.0**	5.3**	5.6**
Total	410	5.7	4.7	5.3

* Student's first choice in the Match, even if they were not accepted for this specialty. See Table 2 for definition of controllable specialties. Primary care was defined as family medicine, internal medicine, and pediatrics. Students were defined as considered primary care if they listed one of these specialties in their list of other specialties considered.

† Students were asked to rate each specialty's lifestyle on a scale of 1–9, with 1 being the worst and 9 being the best.

** Comparisons made by ANOVA, followed by Bonferroni multiple comparison tests if F test was statistically significant ($P<.05$). All values marked with ** had a Bonferroni multiple comparison $P<.013$ when compared to the controllable lifestyle, did not consider primary care category.

higher than osteopathic students: radiology (8.2 versus 7.9, $P=.039$) and pathology (7.4 versus 7.1, $P=.045$).

Discussion

In this national sample of fourth-year medical students after the residency Match, we found that students considered the R.O.A.D. specialties (radiology, ophthalmology, anesthesia, and dermatology) to be the specialties with the best lifestyles. Indeed, all controllable lifestyle specialties were perceived to have higher rated lifestyles than primary care specialties and other non-controllable lifestyle specialties. Students rated their chosen specialty's lifestyle higher, but only slightly, than students selecting any other specialty. The lifestyles of primary care specialties were rated lower by students selecting controllable lifestyle specialties than all other students. Traditional positive lifestyle attributes (predictable work hours, time for outside interests, leisure time, and time for family) were associated with lifestyle ratings as anticipated. Lastly, demographic characteristics explained little in the rating of lifestyles.

Our findings provide some important insights into the lifestyle factor in medical students' selection of their specialty. First, we confirmed the previous report that the R.O.A.D. specialties are considered to have the best lifestyles by current medical students.⁵ Second, students selecting controllable lifestyle specialties but not considering primary care had the lowest rating of primary care specialties' lifestyle. Controllable lifestyle students who considered primary care seemed to have a higher rating of primary care lifestyles but still less than students who chose primary care and non-controllable lifestyles. Lastly, students had realistic expectations of their own specialty's lifestyle, as they tended to rate their own specialty only slightly higher than other students. Taken together, these findings suggest that students selecting the R.O.A.D. specialties know their specialty has a

lifestyle that is perceived to be better than that of primary care specialties. Additionally, students who choose primary care and non-controllable lifestyle specialties do indeed "know what they are getting into" when they choose their specialty. Despite this, lifestyle is clearly not the only factor students are using when selecting their specialty, as 64% of our cohort chose a primary care or non-controllable lifestyle specialty. Future studies might attempt to determine what factors about primary care or specialties with non-controllable lifestyles make a lower rated lifestyle acceptable to students selecting them.

Demographic factors, in particular gender, had little effect on the perception of specialties' lifestyle. Radiology was the only controllable lifestyle specialty rated differently by women than by men. Thus, our finding would suggest that gender has little effect on the changing of specialty choice away from primary care due to lifestyle factors, which was the case in one previous study.¹²

Previous researchers found the factors of time for outside activities and schedule control were related to the concept of controllable lifestyle.^{1,2,4,13-15} Our study confirmed this relationship. Students valuing these factors rated top-rated specialties for lifestyle higher and bottom rated specialties for lifestyle lower than other students. Thus, the validity of our study is supported, and these factors still seem to be important to the current generation of students.

Our finding demonstrating higher ratings in four surgical specialties by osteopathic students compared to allopathic students is interesting. One explanation is that osteopathic students frequently train in community hospital settings, and perhaps the lifestyle of the community surgeon is perceived as better than the university hospital surgeon. More research is needed here.

Our study had several limitations. The response rate was only 52%, leaving the possibility for

non-response bias. However, this response rate is only slightly less than that typical of physician studies.¹⁶ We also determined that the specialties of the Army HPSP nonrespondents were nearly identical (within 2%) to the respondents for all but two specialties. Our sample population contained only those graduating medical students who have a military service obligation, and there may be characteristics of these students (eg, desire to serve their nation) that influence how they view lifestyle. However, 85% of the students had attended civilian medical schools. Additionally, HPSP students have been shown to be academically similar to non-HPSP students at osteopathic medical schools, although their financial debt would be expected to be less.¹⁷ Further, the percentage of US senior students selecting primary care specialties in the civilian Match in 2009 (defined as family medicine, internal medicine categorical/primary, and pediatrics categorical/primary, as military programs greatly de-emphasize preliminary internal medicine and combined specialties such as medicine-pediatrics) was 31%, which is similar to the 36% in our study.¹⁸ Recall bias is also possible given that the survey was completed approximately 6 months after the military residency Match. Finally, the introspective causal report study design applied in this study, whereby students are asked to report factors that led them to make specific career choices, has been associated with various attributional biases (eg, salience bias, self-serving bias, self-centered bias) in previous literature, due in part to the frequent discordance between reported and actual influences on behavior.¹⁹ While we recognize this limitation, the survey method remains the most feasible study method for the collection of self-report data.

In summary, fourth-year medical students in 2009 seem to believe that the R.O.A.D. specialties (radiology, ophthalmology, anesthesia, and dermatology) have the best lifestyles. For students choosing controllable

lifestyle specialties, there is a wide gap between the perception of their chosen specialty's lifestyle and primary care lifestyles, particularly if they did not consider a primary care specialty. Further research to explain these differences in perceptions, particularly why a lower-rated lifestyle is acceptable to some students and not others, are needed, as the answer does not appear to be related to demographic characteristics. Improving the selection rate of primary care specialties, an important goal of the nation's health, might be then be accomplished through improvement in lifestyle factors.

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