Medical Students' Perspectives on Pregnant or Parenting Peers: A Cross-Sectional Survey

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Purpose: *Limited institutional resources exist for pregnant and parenting medical students; however, students' opinions regarding pregnancy in medical school have not been reported. The authors assessed medical students' perspectives regarding pregnant or parenting peers and underlying bias or resource gaps.*

Methods: *An online, cross-sectional survey was distributed in October 2022 to medical students at Michigan State University College of Human Medicine (n = 806) to explore demographics, bias, family planning, and available resources. Descriptive analyses, a two-tailed t-test comparing female and male responses, and a one-way analysis of variance test comparing medical school classes were used.*

Results: *The survey response rate was 13.2% (n = 106). Few respondents (n = 4, 3.8%) had been pregnant during medical school. The majority (n = 67, 71.3%) indicated family plans influence specialty choice. Furthermore, 78.0% (n = 42) cited career and education as their reason for choosing to delay pregnancy. Other descriptive analyses identified that 80.0% (n = 75) of respondents were not aware of resources available for pregnant or parenting classmates. Also, 13.0% (n = 12) of respondents had witnessed bias toward a pregnant medical student. Differences in opinions between males and females were present regarding bias and support available. Differences between medical student classes also exist regarding opinions indicating pregnancy as a barrier during school. The statements with the strongest overall agreement were: Pregnant medical students are resilient, face additional challenges, and parental leave should be available in medical school.*

Conclusion: *This study provides new information regarding pregnancy opinions in medical school and highlights pregnant medical students' challenges and biases. We revealed common delays in pregnancy due to career or educational choices and uncovered the strong consensus among students that parental leave should be an option. Support efforts are warranted to decrease biases and offer parental leave to promote equity and inclusion.*

Keywords: *medical education; pregnancy; biases; resource availability; parental leave*

INTRODUCTION

Medical students face numerous barriers and challenges to pregnancy and family planning during their graduate school careers. Despite the hectic schedules and demanding course loads, many successful students overcome these barriers and begin families during their training. Over 7% of graduating medical students were parents in 2020.[1]

In a previous survey of South Dakota Medical School students conducted in 2016, 15% of the respondents were parents or currently pregnant.[2] Of those who reported maternity leave, 72% would have opted to extend their leave time if it did not delay graduation.[2] Additional findings included that resources for pregnant and parenting medical students were difficult to locate at the medical school. Of the 194 respondents, 85% recommended that the following elements be included in an institutional policy: how to request special accommodation or leave, the process for arranging parental leave, how missed requirements could be made up, and how leave time might affect graduation.[2]

A follow-up study investigated how other medical schools compared to the ideal policy recommendations. The study considered the websites of 33 medical schools for inclusion of the four previously listed policy elements as well as the school's plan for communicating the policy to students, a statement of support for pregnancy or parenthood in medical school, resources available for those who desire mental health counseling, and how to request additional accommodations.[3] Only one of the medical schools included all seven items on their website.[3] The authors of this study suggest that inclusive information

on medical school websites would help current and future medical students navigate family planning.[3]

The challenges posed by lack of information, resources, and support surrounding pregnancy and parenthood often continue into residency. A national survey of 347 general surgeons who have been pregnant revealed concerns about unmitigated work schedules while pregnant, inadequate lactation support, and limited childcare options; dissatisfaction with maternity leave options and desire for greater mentorship on work-life integration.[4] In addition, the respondents reported a negative stigma associated with pregnancy as a training surgeon.[4] These challenges were associated with 39% of participants considering leaving residency. Furthermore, 30% reported that they would advise a female medical student against pursuing a career in surgery due to the challenges of balancing pregnancy, motherhood, and training.[4]

Of surveyed general surgery residents, 78.4% of women received maternity leave of 6 weeks or less and 72% perceived the duration of leave to be inadequate.[4] An additional study of obstetrics and gynecology residency programs revealed that program directors reported they offer shorter parental leaves than they think trainees should receive on average.[5] Most program directors (82.8%) also believed that becoming a parent affected resident performance negatively.[5] Concerns of parental leave appear to begin in medical school. In a survey conducted of 41 osteopathic medical schools, only 2 (4.9%) had an established parental leave policy in place.[6] Most remaining schools recommended taking a leave of absence with variable terms of delaying graduation.[6]

The limited parental leave in medical school and shortened parental leave in residency has likely delayed the age students and residents become parents. In a survey of obstetrics and gynecology residents, 53.7% were delaying pregnancy at the time of survey completion.[7] The largest reason for delaying pregnancy was career or education (84.5%), followed by financial reasons, a lack of a partner, or partner preference.[7] In addition, a previous study comparing the pregnancy delay among physicians and non-physicians indicated that physicians were less likely to experience childbirth than non-physicians between 15 and 28 years old and more likely to experience childbirth at ages 29–36.[8] The median age of childbirth was 32 for physicians and 27 for non-physicians.[8]

Female trainees and physicians face further challenges regarding pregnancy and parenthood. In a previous survey of male and female faculty in academic medicine, the majority agreed that female faculty who were parents were less able to meet career demands.[9] In another survey that looked at general surgery residency program directors, respondents perceived children as decreasing female trainees' well-being more often than male trainees'.[10] In addition, the program directors were more likely to say becoming a parent negatively affects a female trainees' work than a male trainees'.[10] Based on these findings, women may be more likely to be vulnerable to the challenges of pregnancy, postpartum, parental leave, and childcare.

Previous research questions aimed at understanding medical student perspectives have proved useful in initial determination of prevalence for other widespread issues that affect medical students, such as imposter syndrome and burnout.[11] These surveys have helped to uncover and quantify these issues and have subsequently led to further studies aimed at addressing those issues scientifically through randomized controlled trials of prospective solutions.[12] That degree of investigation has not yet been pursued for understanding perspectives on pregnancy and parenting at the undergraduate medical education level.

Several studies indicate the minimal resources for pregnant or parenting medical students and limited parental leave likely contribute to delaying pregnancy. The scarcity of information may perpetuate feelings of stigmatization in pregnant and parenting students and residents. However, there is limited data to investigate medical students' perspectives and opinions about other pregnant and parenting medical students. This study aimed to investigate medical students' perspectives of their pregnant or parenting peers and uncover any biases, stigmas, and resource gaps. Additionally, the survey explored medical students' perceived effect of pregnancy on career choices, career trajectory, and family planning. To further differentiate the responses and uncover any underlying biases, the study investigated differences in the survey results between male and female respondents as well as across the different medical school classes. The distinction between the medical school classes was explored because of the different challenges that each year brings including but not limited to medical board exams, clerkships, away rotations, and residency interviews.

METHODS

Survey Development

We developed an online survey to explore possible biases held by medical students of other pregnant or

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parenting medical students and knowledge of potential related challenges. The survey length was optimized based on comments from faculty and the Institutional Review Board (IRB) committee. The survey questions were inspired by previous studies.[3,5,7] The questions included in the survey consisted of the following themes: student demographics, career trajectory, attitudes toward pregnant colleagues, family planning actions, similarities between pregnant and non-pregnant medical students, parenting perspectives, and knowledge of resources available. No identifiable information was collected in the survey.

The study consisted of one form containing 55 questions. There was one free-response question, and the remaining questions were multiple-choice selections. For the multiple-choice questions, those who selected 'other' could describe their response in free-response form. All questions were optional to complete. The estimated time to complete the survey was 7–10 min, based on researcher estimates.

The purpose of the research was included in the recruitment email and on the first page of the survey. Choosing to proceed with the survey indicated consent. This study was approved by the Michigan State University IRB in the exempt category.

Survey Distribution and Data Collection

We conducted a cross-sectional survey of medical students at Michigan State University College of Human Medicine. The online survey was developed and administered via Qualtrics, which also stored the unidentified responses. Utilizing Michigan State University College of Human Medicine email listservs, the survey was sent to all students at the medical school in October 2022 ($n = 806$). The survey was sent to the listserv one time. The students had approximately 4 weeks to complete the survey and responses were collected in November 2022. Respondents were only allowed to complete the survey one time.

DATA ANALYSIS

All questions were optional, and all responses were included in the analysis regardless of the percentage of survey completed. Participant demographics and other categorical data were summarized using frequencies and percentages. The agree-disagree statements, however, were summarized using means and standard deviations generated via the survey software. For these data, a numerical value of up to seven was associated with each categorical variable. The category (point value) definitions are as follows: strongly disagree (1), disagree (2), somewhat disagree (3), neither agree or disagree (4), somewhat agree (5), agree (6), and strongly agree (7).

The agree-disagree statements underwent additional post hoc statistical tests, as the authors felt these questions best assessed bias toward pregnant classmates. Two statistical tests were utilized to interpret the data (described below), and all analyses were conducted on the Qualtrics program. A two-tailed *t*-test was used to compare the mean between male and female respondents. In addition, a one-way analysis of variance (ANOVA) test was used to compare the response mean between the first-year (MS1), second-year (MS2), third-year (MS3), and fourth-year (MS4) medical students. The level of statistical significance was set at $p < 0.05$ for both sets of analyses.

RESULTS

A total of 13.2% ($n = 106$) of invited medical students participated in the survey. Respondents did not have to answer all questions to participate in the survey; however, at least 88% ($n = 93$) of respondents answered each question. The complete survey is available as Supplemental Digital Appendix 1 containing individual survey questions with response rates.

DEMOGRAPHICS

Of the respondents, 76.4% ($n = 81$) and 21.7% ($n = 23$) identified as female and male, respectively. One respondent identified as non-binary (<1%), and one did not report a gender (<1%). Most respondents were 20–25 years old ($n = 52$, 49.5%) or 25–30 years old ($n = 40$, 38.1%). The age of the remaining respondents ranged from 31 to 40 years old. Race and ethnicities reported in this survey include: White ($n = 80$, 76.2%), Black or African American ($n = 7$, 6.7%), Asian ($n = 8$, 7.6%), American Indian or Alaskan Native ($n = 2$, 2.0%), and other ($n = 8$, 7.6%). Respondents' relationship status responses indicated that 29 (27.4%) were married, 35 (33.0%) were partnered, and 37 (34.9%) were single. Twenty-nine respondents (27.4%) were in their first year of medical school, 26 (24.5%) in their second, 36 (34.0%) in their third, and 15 (14.1%) in their fourth.

PREGNANCY PLANS AND CAREER TRAJECTORY

All respondent data related to family planning perspectives are reported in Table 1. A small number of respondents ($n = 4$, 3.8%) had been pregnant during medical school; however, 4.8% ($n = 5$) were attempting to get

Table 1. Responses demonstrating family planning perspectives.

Question	Classification	Number of participants	Percentage
Do you currently have or intend to have children?	Yes	58	61.7
	No	22	23.4
	Unsure	14	14.9
The prospect of a family influences the specialty I intend to pursue.	Yes	67	71.3
	No	24	25.5
	Unsure	3	3.2
Are you satisfied with your current family size?	Yes	44	46.8
	No	35	37.2
	Unsure	15	16
Have you chosen to delay pregnancy (if applicable)?	Yes	48	65.6
	No	21	28.8
	Unsure	4	5.5
If answered yes to the previous question (choosing to delay pregnancy), what was the reason for delaying pregnancy?	No partner	1	1.9
	Career/education	42	77.8
	Financial reasons	4	7.4
	Partner preference	2	3.7
	Health	0	0
	Other	5	9.3
What is the number of children you desire to have (if applicable)?	0	8	8.6
	1–2	52	55.9
	3–4	31	33.3
	5+	2	2.2
Pregnant in Medical School	Yes	4	3.77
	No	89	83.96
	Does not apply	11	12.26
Currently Attempting to Get Pregnant	Yes	5	4.76
	No	87	82.86
	Does not apply	13	12.38
Ever Attempted to Get Pregnant	Yes	5	4.72
	No	89	83.96
	Does not apply	12	11.32

pregnant, and 61.7% ($n = 58$) planned to have children in the future, not limited to their time in medical school. Most respondents ($n = 67$, 71.3%) indicated that their family prospects influence their medical specialty choice. Furthermore, of those who planned to have a family, 66.0% ($n = 48$) reported choosing to postpone pregnancy. Respondents most commonly ($n = 42$, 78.0%) cited career and education as the reason for delaying pregnancy, followed by 'other' ($n = 5$, 9.3%), finances ($n = 4$, 7.4%), and partner preference ($n = 2$, 3.7%).

PERCEPTION OF PREGNANT MEDICAL STUDENTS

All statements regarding respondents' perception toward pregnant medical students are reported in Table 2. The survey was scored on a Likert scale with 1 indicating strongly disagree and 7 indicating strongly agree. Respondents agreed that pregnant medical students are more likely to experience bias than their fellow male classmates who are parents (M = 6.2, SD = 1.2). A statistically significant difference ($p < 0.01$) was found between male and female respondents of this item with female students with an average score of 6.5 and male students with an average score of 5.4. Male students were the only respondents who selected 'disagree' or 'somewhat disagree' from response categories while all other response categories included both male and female participants. Similarly, respondents somewhat agreed that pregnant medical students face bias (M = 5.7, SD = 1.1). Females had an average response of 5.6 and males of 5.2 ($p = 0.02$).

On an average, medical students somewhat disagreed that pregnant medical students felt supported

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Table 2. Mean responses to statements investigating perceptions toward pregnant medical students.

Bias assessing statement	Mean	Standard deviation
Pregnant medical students are resilient.	6.6	0.68
Pregnant medical students face additional challenges.	6.5	0.68
Pregnant medical students have a harder time securing residency	4.8	1.29
Parental leave should be available in medical school	6.4	0.97
Pregnant medical students are competent.	6.4	0.82
Pregnant medical students are trustworthy.	6.3	0.92
Pregnant medical students are more likely to experience bias than their fellow male parents.	6.2	1.22
Pregnant medical students face bias.	5.73	1.06
Pregnant medical students feel guilt.	4.51	1.38
Pregnant medical students feel isolated	5.12	0.95
Pregnant medical students feel supported.	3.89	1.17
Pregnant medical students feel prepared.	4.62	1.13
Pregnant medical students feel excited.	5.39	0.92
Pregnant medical students feel overwhelmed.	5.89	0.99
Pregnant medical students are reliable.	5.76	1.06
Pregnant medical students perform the same as their fellow classmates.	5.74	1.26
Pregnant medical students are seen as equals to their non-pregnant colleagues.	4.14	1.63

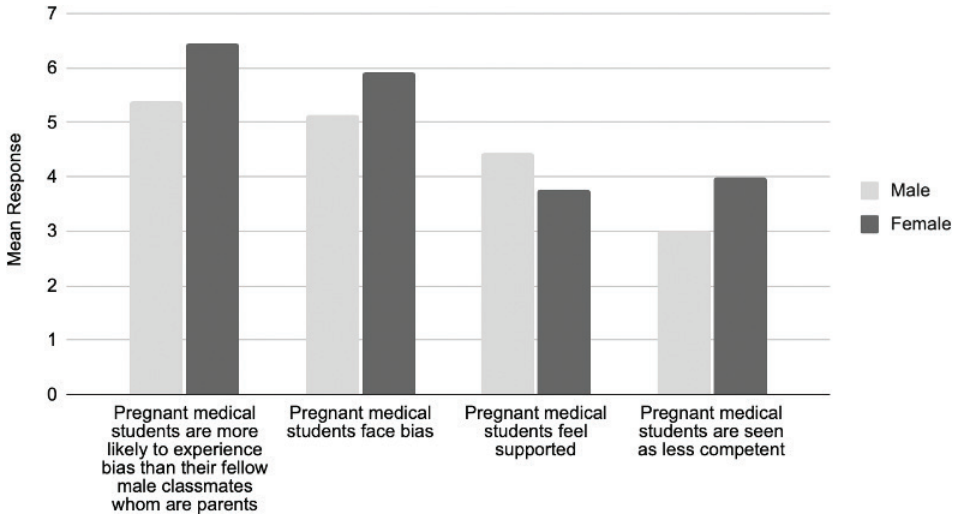

Figure 1. Female and male responses with statistically significant difference ($p < 0.05$).

(M = 3.9, SD = 1.2). Male students had an average response of 4.5, indicating neither agree or disagree, while female students had an average response of 3.8, indicating a disagreement with the statement ($p < 0.01$). Other statements that medical students agreed with included: pregnant medical students are resilient (M = 6.6, SD = 0.7), pregnant medical students face additional challenges (M = 6.5, SD = 0.7), pregnant medical students are competent (M = 6.4, SD = 0.8), and parental leave should be available in medical school (M = 6.4, SD = 1.0). These statements were not significantly different between female and male respondents. Statements with statistically significant differences between male and female cohorts are reported in Fig. 1.

There were also reported differences in opinions based on the current year of medical school. On an average, respondents neither disagree nor agree that medical school is not the ideal time to raise a child (M = 4.9, SD = 1.6). MS1s, on average, neither agree nor disagree with

the statement (M = 4.2), while MS2 respondents slightly agreed with this statement (M = 5.5; $p = 0.04$). In addition, respondents somewhat agree that pregnancy is seen as a barrier in medical school (M = 5.38, SD = 1.3). When comparing MS1, MS2, and MS3 students, MS2s were more likely to agree (M = 6.1), rather than somewhat agree like the MS1s (M = 5.2; $p = 0.03$) and MS3s (M = 5.1; $p = 0.03$). Statements with statistically significant differences between medical school classes are reported in Fig. 2.

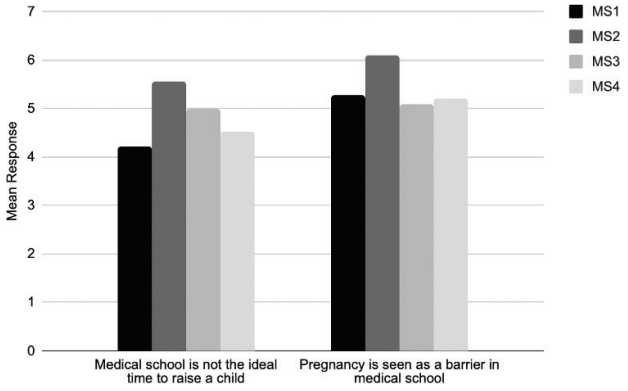

Figure 2. Medical student class responses with statistically significant differences ($p < 0.05$).

All statements regarding respondents' knowledge of bias and pregnancy resources are reported in Table 3. Of the respondents who have been pregnant, only one student (20.0%) reported experiencing bias during medical school. However, 12 student participants (13.0%) reported they had previously witnessed bias toward another pregnant medical student. Respondents most commonly report faculty to portray the biases ($n = 7$, 41.0%), but they also report instances of bias with peer students ($n = 3$, 18%), clinical preceptors ($n = 1$, 6.0%), and 'other' ($n = 6$, 35.0%). In addition, 80.0% ($n = 75$) of the respondents did not know about resources available for pregnant or parenting classmates, but most respondents would feel comfortable assisting another student in seeking assistance ($n = 81$, 86.0%). Of the respondents, 37.0% ($n = 35$) would be comfortable seeking support for pregnancy in medical school, but 29.0% ($n = 27$) were unsure of their comfort level.

DISCUSSION

This study provides new information regarding opinions on pregnancy in medical school and highlights the challenges and biases that pregnant medical students face. Based on responses, it is apparent that medical school

Table 3. Results indicating observed bias in medical school and knowledge about resources for pregnant medical students.

Question	Classification	Number of participants	Percentage
Have you witnessed bias toward another student who was pregnant?	Yes	12	12.8
	No	71	75.5
	Unsure	11	11.7
If answered yes for the previous question (witnessed bias toward another student), who did you witness portraying the bias?	Faculty	7	41.2
	Peer student	3	17.7
	Preceptor	1	5.9
	Other	6	35.3
If you have been pregnant in medical school, have you experienced bias?	Yes	1	20
	No	4	80
Do you know about resources available for pregnant or parenting classmates?	Yes	11	11.7
	No	75	79.8
	Unsure	8	8.5
Would you feel comfortable seeking support for pregnancy in medical school?	Yes	35	37.2
	No	18	19.2
	Unsure	27	28.8
	N/A	14	14.9
Would you feel comfortable helping another student seek support for pregnancy in medical school?	Yes	81	86.2
	No	4	4.3
	Unsure	9	9.6
Do you know of any resources at MSU that support pregnant medical students?	Yes	6	6.4
	No	79	84
	Unsure	9	9.6

and future medical training are considerations in family planning. Interestingly, the MS2s were more likely to state that medical school is not the right time to have children and that pregnancy is a barrier during medical school. These comments are from the class who face their first board exam after their second year, which may impact their viewpoint. The lack of significance between male and female respondents indicates that both pregnancy and parenthood should be considered while establishing protocols to address family planning for medical students. Furthermore, survey participants agree that pregnant students face bias independently and to a greater extent than their male parenting colleagues. Female respondents indicated stronger agreement with these statements suggesting a possible implicit bias among students, as other statements showed congruence among males and females. As such, while the beliefs indicate support, behaviors observed or past experiences contribute to the stigmatization of pregnant medical students.

Some results indicated uncertainty. For instance, male students remained unsure about how supported pregnant students feel, while their female counterparts indicated a lack of support. This discrepancy may arise from the lack of knowledge regarding resources available for pregnant students or the difference in experiences between the two groups.

Importantly, most respondents (n = 67, 71.3%) indicated that their family prospects influence their medical specialty choice. A majority of those who chose to have a family reported postponing pregnancy with career and education being the most common reason. These findings are similar to those reported in the previous survey of Obstetrics and Gynecology residents that revealed high rates of pregnancy delay with career and education being the most common reason.[7] In addition, these responses also correlate with the survey of general surgery residents who had been pregnant previously and expressed concern for lack of support and negative stigmatization regarding pregnancy in residency.[4] This stigmatization and lack of support led to almost 40% of the participants considering leaving residency.[4] The findings in the previous surveys of residents along with the current survey of medical students demonstrates the effect of career on pregnancy and vice versa. This stigmatization may influence female medical students' specialty choice and therefore contribute to disparities between male and female employment rates in certain specialties.

On a hopeful note, there were many positive attributes revealed in this survey. Across all respondents, there was agreement that pregnant students are resilient and competent. There was also a consensus that parental leave should be offered to medical students. These positive attributes indicate that, despite the bias experienced and the uncertainty in available student resources, students want to support other students. To promote equity and inclusion in medical education and specialty choice, efforts are needed to support pregnant or parenting students by decreasing existing biases and offering parental leave.

A recent article explored medical students' perception of a new American Board of Medical Specialties (ABMS) policy on a family leave requirement in programs longer than 2 years.[13] This policy requires programs to offer at least 6 weeks of parental, caregiver, and family leave if training extends more than 2 years. The leave does not exhaust vacation or sick leave. Medical students admit that the ABMS policy is a positive change; however, they indicate further changes are needed to provide adequate support, such as including leave for birthing and non-birthing parents, the inclusion of all levels of trainees, prohibiting 24-h call shifts for third-trimester residents, offering childcare options, and providing mental health check-ins.[13] The research demonstrates an effort to improve the pregnancy experience in residency and can act as a guide for medical schools establishing protocols for pregnant and parenting students. Changes such as explicit guidelines for pregnant classmates and specific advocates and counselors would allow pregnant or parenting students to access assistance while informing others in the school of possible challenges and resources available.

The primary limitation of this study includes a limited sample size from a single medical school. The limited responses from non-binary and transgender students suggest that these results are missing nuances from underrepresented populations that are at an increased risk of facing biases. Furthermore, some respondents felt that this survey did not accurately represent students who do not desire a family or opted to wait for reasons unrelated to medical school. While there were options for the survey to express various aspects of family planning, the limited opportunities for free responses may have obscured unique considerations for many students. In addition, the survey did not directly address biases or challenges specific to females who are already parents but not currently pregnant. As such, more research is

needed to understand the biases specific populations endure and ensure inclusivity for all students regardless of personal background, goals, or family plans. Additional investigation could also include extending the survey to the other components of the medical education system, such as program faculty, staff, and administrators, to assess their perceptions of bias against pregnant and parenting medical students and develop a more complete understanding of the issue at large.

CONCLUSION

This study provides new information regarding pregnancy opinions in medical school and highlights pregnant medical students' challenges and biases. We revealed common delays in pregnancy due to career or educational choices and uncovered the strong consensus among students that parental leave should be an option. This study compares responses between male and female respondents as well as among medical school classes. This comparison revealed a number of differing opinions and potential underlying biases. Furthermore, this study revealed that most medical students were unaware of resources available for pregnant or parenting colleagues. Based on these findings, support efforts are warranted to decrease biases, increase resource availability, and offer parental leave to promote equity and inclusion. Further research is also warranted to survey opinions from a number of different medical schools to increase the number and diversity of the responses.

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CONFLICT OF INTEREST AND FUNDING

All authors declare that they have no conflicts of interest.

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