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The Effect of COVID-19 on the Medical School Experience, Specialty Selection, and Career Choice: A Qualitative Study

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OBJECTIVE: While COVID-19 had a profound impact on healthcare, its effects on medical students are less clear. This study explored the effects of COVID-19 safety measures on medical students' specialty selection and career choices. It further considers the potential differential effects of COVID by gender.

DESIGN: Between June and November 2020 at a Midwestern medical university, medical students with an anticipated graduation in 2021 through 2023 participated in virtual focus group sessions, which explored students' transition to remote learning during COVID-19, perception of gender bias within medical education, and personal and professional goals. Nine focus groups were held, with two to six students per session (n = 22). Focus groups were video recorded, transcribed verbatim, and data were deidentified. Transcripts were coded and analyzed using consensual qualitative analysis to identify themes.

RESULTS: Our analysis captured 3 themes: (1) Impact of Institutional Decision-Making due to COVID-19, (2) Impact of Unstructured Time on Professional and Personal Decision Making, and (3) Impact of Societal Pressures, Gender Bias, and Mentorship on Career Planning.

CONCLUSIONS: COVID-19 disrupted important learning opportunities for medical students. Mentorship and shadowing are critical in helping students make career and specialty decisions, particularly for women. The loss of these opportunities may have lasting career impacts for all students. (J Surg Ed 79:661–667. © 2021 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

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KEY WORDS: Gender, Medical Students, Coronavirus, Mentoring, Specialty selection

COMPETENCIES: Professionalism, Interpersonal and Communication Skills, Practice-Based Learning and Improvement

INTRODUCTION

The unprecedented impact of the global SARS-CoV-2 (COVID-19) pandemic was sudden, with little knowledge of the short or long-term effects. Academic medical institutions adapted rapidly with new and relatively strict guidelines for subsequent medical education endeavors.¹ Medical students were among the first to be sidelined, both to protect their health and to reduce burden on scarce personal protective equipment. Relegated to virtual classrooms and infrequent online medical visits, students discovered creative ways to assist with the crisis, or found themselves on a forced vacation from clinical work.² While both women and men medical students were given the same restrictive stay-at-home orders, the impact of the consequential isolation on either medical student gender remains unclear.

Mentorship experiences and role models are important drivers toward non-primary care specialties, such as surgery; as mentors guide students to new interests and facilitate discussions on specialty culture.³ Conversely, lack of mentorship is a driver for *not* choosing a specialty, especially for those underrepresented in that specialty, who might believe that you “can’t be what you can’t see”.⁴

Gender inequity in medicine is described as a “pre-existing social condition”; one that existed well before COVID-19 and has the potential to negatively affect medical students' career trajectories.⁵ Societal norms suggest

that women should enter primary care specialties, such as pediatrics or family practice, that are consonant with ‘helper’ roles and provide the perceived need of flexibility for their future as mothers.⁶ Women are particularly steered away from surgical career choices by surgical fields’ lack of role models, perceived poor work-life balance, and lack of women role models.⁷ If COVID-19 related lockdowns decreased access to specialty-specific mentorship or other contact opportunities, women students could be particularly affected.

The purpose of this qualitative study was to understand the effects of COVID-19 safety measures on medical students’ career aspirations and specialty choice, with further consideration of the particular needs of women students.

MATERIALS AND METHODS

This qualitative study was conducted at a private academic medical institution in the Midwestern United States during the height of the COVID-19 pandemic, from June 2020 to November 2020. The research team was made up the five authors including 1 medical student (CK), 2 physicians (EE and AF), and 2 PhD qualitative experts (KQ and KK). This study aimed to gather insights and experiences of medical students to understand the implications of COVID-19 and gender on student specialty selection and career choice. Study procedures were reviewed and approved by the Institutional Review Board at the Medical College of Wisconsin.

Data Collection

Purposeful sampling was used to recruit medical students to participate in virtual focus groups. Medical students with an anticipated graduation of 2021 – 2023 were recruited using established institutional email list serves and student-cohort Facebook page advertisements. Students self-selected to participate via an online Qualtrics survey link. Focus groups were organized by cohort (e.g., M1s) and were mixed-gender.

A semi-structured focus group guide was created based on preliminary research questions and extant literature. The study team piloted, discussed, and refined the guide. Groups were facilitated by CK (medical student) with the assistance of another member of the research team to ensure at least two research team members for each focus group to reduce interviewer bias⁸ and ensure consistency and rigor. Questions were designed to elicit students’ perception of gender bias within medical education, personal experience during COVID-19, and personal and professional aspirations [Appendix A]. The focus group guide covered topics including:

productivity, work, and home life during COVID-19, medical specialty selection decision-making processes, and life goals outside of medicine. These analyses specifically focused on COVID-19, specialty selection, and gender.

Nine focus groups, with 2 to 6 students per group, were conducted using Cisco Webex video-conferencing software. Given the virtual nature of the focus groups participants could participate from any location of their choosing. Smaller focus groups permitted greater intimacy, allowing students to see one another on the virtual meeting grid, and ensuring that time was available for all voices to be heard. Each focus group lasted approximately 60 minutes. The lead interviewer, CK, recorded field notes after each interview. Video recordings of each focus group were compiled, transcribed verbatim, and deidentified. Over the 5 months of data collection, the research team met at least monthly to debrief the focus group data, discuss thematic saturation, and make decisions about when to cease data collection.

Data Analysis

The Consensual Qualitative Research (CQR) method was used for analysis,⁸ which is useful in understanding in-depth experiences, attitudes and beliefs. CQR requires the research team to reach consensus of data categorization and meaning independently and then collectively agree on data interpretation and meaning to enhance trustworthiness of the data analysis. All research team members independently read focus group transcripts and generated an initial domain list. The research team participated in collaborative discussion until they reached consensus regarding primary domains and finalized a codebook. All focus group transcripts were then reread by 2 research team members (CK and KQ) who completed line-by-line coding of all transcripts using Dedoose, a web-based application to support qualitative data analysis. Thematic analysis techniques were used to identify and name themes, which were discussed and refined in regular meetings with the research team. Analyses examined any differences in experience and perspective by cohort and gender. CK and KQ completed cross-analysis and revised the themes to determine and refine interpretations within transcripts.

RESULTS

Twenty-two students participated in the study, see (Table 1) for demographics.

Through analyses, the research team identified three themes: (1) Impact of Institutional Decision-Making due to COVID-19, (2) Impact of Unstructured Time on

TABLE 1. Student Demographics

Yr of Study	Gender	Race/Ethnicity	Current Marital Status
Class of 2023	6 Women	6 Caucasian	6 Single
	4 Men	4 Asian	4 Married/Partnered
Class of 2022	3 Women	4 Caucasian	4 Single
	2 Men	1 Asian	2 Married/Partnered
Class of 2021	1 Non-Binary	1 Black/African American	
	3 Women	4 Caucasian	4 Single
	3 Men	1 Asian	2 Married/Partnered
		1 Hispanic/Latinx	

Professional and Personal Decision Making, and (3) Impact of Societal Pressures, Gender Bias, and Mentorship on Career Planning.

Theme 1. : Impact of Institutional Decision-Making on Students due to COVID-19

Institutional decisions in response to COVID-19 disrupted many of the traditional opportunities for mentorship and support. Stay-at-home orders required many schools to remove students from hospitals and clinics and cancel most, if not all in-person educational opportunities. Specifically, cancelled clinical shadowing opportunities left some students feeling disconnected from school and limited their exposure to potential medical specialties. A student explained: “I’m kind of sad about the pandemic because I feel it limits our opportunities to shadow other fields and explore.” Another second-year woman student felt that this lack of exposure limited her specialty choices adding, “If there was no COVID and I was able to still shadow at other specialties [maybe] that could change?” As specialty choice became more imminent for senior students, a fourth-year woman medical student who lost her preferred clerkship rotations expressed frustration:

I was looking forward to [rotations] being kind of my clarifying moment! Of, you know, ‘this is what I want to do.’ I didn’t necessarily have that.

Beyond lost opportunities for mentorship and clinical opportunities at their home institutions, students also described the impact of away-rotation cancelation. A fourth-year man medical student outlined a cascade of consequences:

[N]ot being able to get on some programs’ radars by doing an away [rotation] at their program, or getting to know somebody attending that other program, or not getting letters of rec from other programs can inhibit things.

Similarly, another fourth-year man student worried that the loss of away rotations may significantly impact students’ opportunities for residency positions:

On the virtual interview, I can’t really talk to the residents or the program director or anyone in a residency that I apply to and be like “Heyyyy!” and joke around. Ultimately, programs aren’t going to know the applicants’ personality, they’re going to know them by their measurable standards.

Collectively, these students hypothesized that given this loss of professional relationship building, residency programs rely more heavily on Step 2 exam scores and other standardized metrics, rather than considering students’ “emotional intelligence.” Students expressed concern that institutions may be biased toward students from their home institutions or those with whom they have had more exposure.

Theme 2. : Impact of Unstructured Time on Professional and Personal Decision-Making

While COVID-19 restrictions limited student access to professional opportunities, the increased availability of unstructured time encouraged reflection. Reflecting from home, students expressed concern regarding a future in COVID-intensive specialties:

I think that the kind of risk we’re undertaking as somebody going into the ER, Critical Care, or ICU, you know – it’s a really wonderful diverse specialty, whichever one you choose, but it also casts into the spotlight that you’re the frontline. And that you don’t have an option to stay at home. You just don’t. You’re the one that has to respond. And I guess, just appreciating that in a different light, and thinking like ‘is that the right choice for me?’ . -2nd year woman medical student

Regardless of planned future specialty, increased time at home clouded decision making, due to limited opportunities and exposure to specialties of interest. A fourth-year woman describes this as, “[COVID-19] made things a little bit blurrier than I was hoping going into residency applications”.

Conversely, some students shared that they were forced to slow down with increased time at home,

which allowed them to gain a deeper understanding of themselves. A third-year woman medical student said, “I’ve been able to really get centered...And re-energized in a way that I felt maybe too guilty to do while in medical school.” Students also developed perspectives about work/life balance and their future careers:

I think it reaffirmed for me [the] importance of having hobbies, things outside medicine. I think a lot of times as students we ‘put our heads down, run forwards’. Having more time to reflect [has] shown me that that’s really not the way it should be. It’s 10–15 years of your life that you’re devoting to this. So, you should enjoy it. -4th year woman medical student

Another fourth-year man medical student expressed a similar sentiment, “I don’t want being a physician to completely define who I am as a person.”

Overall, during the COVID-19 pandemic, students had increased time to contemplate their futures. This reflective practice resulted in a variety of emotions, ranging from increased anxiety of the unknown future, to improved well-being due to an increased sense of self.

Theme 3. : Impact of Societal Pressures, Gender Bias and Mentorship on Career Planning

In addition to the concerns associated with disruptions in training and education due to COVID-19, students also discussed the impact of societal pressures and gender norms on career decisions and specialty choice. Although these challenges were present prior to COVID-19, the opportunities students lost as a result of the pandemic (e.g. shadowing and mentorship), had a unique impact on women. Noting societal biases and gender norms, women indicated that experiences such as shadowing and mentorship were critical in helping them make decisions about specialty selection. Specifically, students identified the positive impact of having women mentors and opportunities to work alongside women physicians; especially those who are mothers or who work in men-dominated specialties. Family planning was a particularly salient concern for many students in specialty selection. A third-year woman medical student, who self-identified as ‘older’, said “my significant other is convinced that I’m going to be obsessed with trauma surgery – and I’m like ‘well when am I going to have kids?!’”. Notably, a man fourth-year student stated with regard to women in medicine: “this imperative of a clock’s ticking. Which, I don’t think I’ve ever felt that, and I never realized it up until that moment, how prevalent that is.” Another fourth-year man student reported “I haven’t put a lot of thought into this, I think. . . You know, as a single guy, I think a lot about my career and that’s where I center a lot of the thinking . . . I think

throughout my life I’ve never really paid much attention to other things.” In contrast to women in this study, the men noted that family planning did not influence their decisions around medical training and specialty choice.

Women in this study also described challenges and gender bias faced by women and physician mothers, particularly those in more demanding specialties or positions. A second-year woman medical student anticipated social scrutiny: “I get worried about the stigma too. Like ‘oh your mom’s a ‘blah blah blah’ she’s NEVER around.” Others noted that similar ideas were implied not only outside medicine, but within clerkships:

There were some subtle comments made by faculty, by residents, both male and female, insinuating “Oh well if you’re female and pursuing surgery then you should really think about this. . . You know, it might not be what’s best for you.” Sort of implied because you’re a woman. -4th year woman medical student.

However, mentorship seemed critical in helping women navigate these challenges. A second-year woman medical student described the mentorship she received from a pediatric surgeon who openly discussed her family life with her, “I think having strong female role models in these fields who have been able to ‘have it all’ . . . that’s been encouraging to hear.” Another woman student emphasized the value of shadowing women:

I’ve shadowed mostly in emergency medicine and in trauma surgery, they’re both pretty male dominated. But I’ve tried to pick female physicians to follow and then I feel I can have [caregiving] conversations with them. -2nd year woman medical student

As evidenced in students’ narratives, mentors were often critical in helping women see how they could pursue both medicine and parenthood, regardless of specialty choice. Students described how women mentors, particularly those who would openly discuss lifestyle, caregiving, and gender bias, helped influence their choices surrounding specialty. Given its importance, the loss of mentorship and opportunities to build relationships with physicians due to COVID-19 may influence women students’ decision-making around specialty choice.

DISCUSSION

This qualitative study investigated the impact of COVID-19 on medical students’ career aspirations and specialty choice. Throughout our focus groups, medical students described the influence of institutional and personal

changes due to COVID-19. Notably, students experienced a disruption in training and mentorship opportunities. Prior to COVID-19, mentorship, especially from women mentors, mitigated gender-based pressures experienced by medical trainees.⁹ As shadowing and mentorship opportunities became limited during COVID-19, students expressed feeling pressured to choose a specialty with insufficient information overall. Often, this left women students drawn toward specialties perceived to be more welcoming to women.

This study highlights the importance of mentorship and exposure in specialty choice. In research conducted prior to COVID-19, students reported that shadowing experiences not only provided exposure to diverse or new specialties, but also served as a gateway to women who helped students think about potential career choices.¹⁰ Early exposure to specialties, particularly mentorship and shadowing experiences from physicians, draws students to their mentors' fields.¹⁰ Perceived lack of work-life balance influences both men and women students, prompting the conclusion of some authors that "generation and gender are both important influences on career choices".⁷ If this is true, then students of all genders could benefit from role models (possibly particularly women role models) whose influence can mitigate the perceptions of surgery's family unfriendliness. As detailed in this study, COVID-19 disrupted many opportunities for students to shadow, identify mentors, and build relationships with physicians. Given the limited training opportunities as a result of COVID-19 disruptions, students may be more inclined to choose specialties they are most comfortable or familiar with. These missing elements may be more critical for students with strong preferences for work-life balance, and especially for women, as women must formulate their decisions with extra factors such as child-rearing.¹¹ Reduced shadowing opportunities due to COVID-19 may exacerbate disparities in medical specialties and potentially increase subsequent disparities in salary and leadership in those fields.⁶

During COVID-19, students in this study described increased opportunities to reflect on the COVID-19 pandemic, their education, and personal values while considering career choices. Reflection builds skills such as adaptive learning and coping mechanisms, which aid in professional identity by recognizing change and encouraging role development.^{12,13} During the COVID-19 pandemic lockdown, students' reflections may be influenced by the loss of guidance characteristically provided by mentors during shadowing experiences and in-person clinical rotations. While potentially able to gain new "soft skills",^{12,14} in-person workplace learning is important in providing students with experiences and feedback that helps them understand their roles.^{15,16}

The lack of shadowing experiences for students may leave out critical elements of identity formation and career decision making, in the same way that telemedicine leaves out critical physical exam skills. In line with previous research,^{17,18} we found that women had reservations about entering men-dominated specialties, expressing concerns regarding both professional and personal spheres. Studies document that women are drawn toward women-dominated specialties, seeing both successful women role models and actively espoused values around family, work-life balance, and child rearing.¹⁹ Conversely, women medical students may be alienated by specialties dominated by men due to societal and professional norms, negative or discriminatory experiences within those specialties, or perceived lack of work-life balance. Ultimately, these factors accumulate to disadvantage women in medicine.

These findings highlight opportunities to address the impact of COVID-19 on medical students. The authors offer the following recommendations:

- Prioritize shadowing opportunities that provide critical opportunities for students to gain exposure and entry into fields in which they are underrepresented. Focusing on mentors from fields with well-documented gender disparities may mitigate pre-existing biases.
- Retain and expand virtual opportunities for students to interact with mentors and organizations through informal events such as journal clubs, discussions, lunchtime meetings, or virtual coffee breaks with faculty. These opportunities can help facilitate critical discussions around work-life balance, specialty choice, and career planning in a casual manner that students often had while shadowing.
- Continue research of the COVID-19 impact on medical students and residents, to identify opportunities for intervention and support.

There are some limitations to this study. First, the participants are from a single academic medical center in the Midwestern United States. The insights and perspectives provided may differ from those at other institutions or in other parts of the country, particularly those impacted differently by COVID-19. Transferability of these findings can be determined by individual application.²⁰ Second, students self-selected to participate in this study, and their experiences may have been different from those who did not or were unable to participate and we do not have data on those who chose not to participate. In an attempt to address that, we did include students from all levels of medical school. Qualitative methods are particularly valuable to capture and present initial experiences during a pandemic, since human behavior and social understanding are best described through diverse voices and varied perspectives.²¹

CONCLUSION

The COVID-19 pandemic disrupted medical education, displacing students from active learning and mentorship to forced vacation, leaving them to reflect for long periods with limited information. The long-term consequences of these changes remain unclear and further work is needed to study the impact of COVID-19 on specialty selection particularly for women. Institutions and mentors should develop more robust virtual and in-person mentorship opportunities, encourage students to cultivate a true reflective practice, and empower students to ask questions to clarify interests and determine specialty fit.

AUTHOR CONTRIBUTION'S

Cassandre Krier contributed to the conception, design, analysis, and writing of this work and approved the final version; she agrees to be accountable for all aspects of the work.

Katherine Quinn, PhD contributed to the conception, design, analysis, and writing of this work and approved the final version; she agrees to be accountable for all aspects of the work.

Kristina Kaljo, PhD contributed to the conception, design, analysis, and writing of this work and approved the final version; she agrees to be accountable for all aspects of the work.

Amy Farkas, MD MS contributed to the conception, design, analysis, and writing of this work and approved the final version; she agrees to be accountable for all aspects of the work.

Elizabeth H. Ellinas, MD contributed to the conception, design, analysis, and writing of this work and approved the final version; she agrees to be accountable for all aspects of the work.

CONFLICT OF INTERESTS: Cassandre Krier: None

Katherine Quinn, PhD: None

Kristina Kaljo, PhD: None

Amy Farkas, MD MS: Serves as a Senior Consultant for the Department of Veteran Affairs Women's Health and is on the American College of Physicians General Internal Medicine Committee for MKSAP 19.

Elizabeth H. Ellinas, MD: As an academic physician, Dr. Ellinas gives professional talks such as grand rounds and medical conference plenary and receives honoraria from conference organizers. She also serves as an advisor on external grants related to women in academia and receives remuneration for those roles.

FUNDING INFORMATION

No funding was received for this work.

ETHICAL APPROVAL

Approval for this study was provided by the Medical College of Wisconsin's Institutional Review Board.

ACKNOWLEDGMENTS

The authors thank the Dr. Elaine Kohler Summer Academy of Global Health Research and the Medical College of Wisconsin Department of Global Health for encouragement and fellowship.

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SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.jsurg.2021.11.007](https://doi.org/10.1016/j.jsurg.2021.11.007).