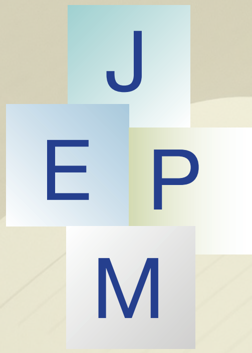

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Original Research

A Qualitative Exploration of the Career-Choice Journey of Women in Anesthesiology

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Introduction

Women have comprised nearly 50% of medical school graduates in the United States for the past 2 decades,[1] yet underrepresentation of women continues. The Association of American Medical Colleges reports that women make up only 41% of all full-time faculty,[2] with a greater imbalance in the perioperative arena. Women comprise 36% of faculty in anesthesiology, 26% in general surgery, 20% in vascular surgery, and 19% in orthopedics.[1,3] Considering current faculty representation, anesthesiology appears more inclusive than these surgical subspecialties; however, a careful look at early career pathway exposes a stark contrast. The ability to recruit medical students into anesthesiology at the undergraduate medical education (UME)-to-graduate medical education (GME) transition remains stagnant. In 2005, 31% of anesthesiology residents identified as women, followed by a peak in 2015 at 36% and a downward trend to 35% in 2023.[4] By contrast, many surgical specialties can boast a recent influx of women.[4] In 2005, women comprised 10% of orthopedic residency positions, 20% in vascular surgery, and 24% in general surgery. Currently women represent 20% of orthopedics resident trainees, 39% in vascular surgery, and 47% in general surgery.[4] Reflecting on the UME-to-GME transition in anesthesiology, the current pool of women trainees (35%) is less than our faculty numbers (36%). Residents are the vital pipeline to the future physician workforce. Recent publications highlight systemic gender inequities in anesthesiology,[5] including fewer women achieving upper-level academic ranks (eg, professor and department chairs)[2] as well as a significant pay gap between men and women.[6] Formal mentorship and sponsorship platforms have been proposed as solutions.[7,8] Unfortunately, if we fail to fill the pathway with women at the start, gender disparities are likely to continue.

Current evidence is lacking regarding how and why women navigate career exploration in anesthesiology. The purpose of this qualitative study is to investigate the phenomenon of women choosing anesthesiology. To quote 1 participant, "I think the more that we understand what it's like to be a [woman] in medicine and the barriers, the more we can mitigate them and encourage more women to go into it."

This manuscript uses binary terms (woman/man, women/men). Current literature and data sets use similar binary terms. The authors recognize that these terms, although common in culture and medicine, do not accurately represent the experiences of those who identify outside these limited terms. Additionally, sex (female/male) and gender terms (woman/man) are often used interchangeably, herein the authors will use gender terms only.

Materials and Methods

Investigators used constructivist grounded theory, a qualitative study design that relies on data collection from participants' shared experiences and perspectives.[9] Constructivist grounded theory is well suited for exploring and explaining social phenomena such as gender-discordant experiences.[10] Through simultaneous data collection and iterative analysis, concepts and themes emerge.

The research team was composed of women in academic medicine, with BMM, ELS, and SLF as academic anesthesiologists. Additionally, ELS and SLF were residency program directors at the time of research investigation. BAAW, a qualitative methodology expert, served as advisor to the team and was integral to research design and manuscript development. The University of Vermont Institutional Review Board approved the study procedures. Authors complied with the Standards for Reporting Qualitative Research guidelines.[11]

A semistructured interview guide (Appendix 1) was developed after a scoping literature review and author collaboration led by BAAW. The guide includes poignant questions to facilitate conversation identifying participants' personal, educational, and professional experiences that influenced their career-choice journeys.

Participant Recruitment

Selection criteria included women who represented 1 of 2 distinct education levels: (1) GME anesthesiology resident physicians

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and (2) UME fourth-year medical students committed to matching into anesthesiology. The authors pursued purposive sampling,[10] initially recruiting from their respective home institutions. An Institutional Review Board-approved email was sent to potential participants requesting participation. Further recruitment occurred through the snowball technique.[12] At completion of each interview, participants were invited to reach out to colleagues at other institutions inquiring about participation in the study. Positive interest was reported back to investigators, with participants disclosing email addresses of interested colleagues. Follow-up occurred with a recruitment email. Response rate cannot be calculated as investigators only received email addresses of interested persons.

Data Collection

The primary investigator, BMM, conducted 1-on-1 semistructured interviews. Interviews occurred via the Zoom virtual platform from February 1 to June 30, 2022. The average interview length was 34 minutes, ranging from 23 to 54 minutes. Interviews were recorded, and audio transcripts were generated from the Zoom platform, version 5.11.1. BMM reviewed transcripts, corrected grammatical errors and audio misinterpretations, and redacted identifying information.

Data Analysis

Qualitative data analysis involved transcript review and the identification of salient phrases and rich comments.[9] To ensure intercoding reliability, initial data analysis involved members of the research team individually engaging in thematic analysis. After individual transcript review, investigators met for peer debriefing sessions, engaging in collective iterative analysis and sharing, debating, and further identifying emerging codes. All code discrepancies were resolved as a group. A code book was created using both deductive coding, relying on topics outlined in the interview guide, and inductive coding, in which new salient topics emerge organically from participants' stories.

Through qualitative investigation, themes emerged during the simultaneous and iterative process of data collection, analysis, and memoing. The process continued until data saturation was achieved (ie, the point at which no new themes emerged), and participant recruitment ceased.[10] After final analysis, member checking was initiated with 2 participants (1 resident and 1 medical student) who were considered "highly informant" during their interviews. The investigators shared themes with these participants via email communication. Both participants confirmed the themes represented their own experiences and/or those of women colleagues.

Results

The sample included 11 participants (4 medical students and 7 resident physicians). The medical students were in their final semester of medical school and were either awaiting residency match results or were recently matched into anesthesiology. Resident physicians represented all levels of GME: 3 postgraduate year 4 (PGY-4), 2 PGY-3, 1 PGY-2, and 1 PGY-1. Participants represented 6 medical schools across 6 states and 4 residency programs across 4 states. Two participants were in marital relationships, 1 participant reported having children, and 2 participants identified as underrepresented in medicine.

Six themes emerged as influencers of the career-choice journey for women anesthesiologists. Codes and themes are outlined in Table 1 and are described in further detail here: (1) specialty characteristics, (2) gender awareness, (3) pathway support, (4) learning environment, (5) hidden curriculum, and (6) mystery behind the drapes. Rich quotes from participants are reported in Table 2.

Specialty characteristics

Participants commonly referenced clinical variety as a significant draw to the specialty, reporting satisfaction in the variety from case to case and day to day as well as various opportunities after residency. Some described subspecialty training options, whereas others touched on employment choices, from academics to private practice and from big medical centers to small town rural hospitals. Many of the fellowship-destined participants discussed the ability to still "do it all" after fellowship, hoping to find careers where they can use specialty and generalist skillsets.

Most participants reported an affinity for problem solving required in anesthesiology, referencing the ability to apply basic pharmacology and physiology to real-life clinical problems. The urgency of clinical management and the immediate gratification of interventions were described as positive experiences. One participant reported the appeal of "fix-it-now" scenarios; yet another described the ability to see her clinical decisions impact the entirety of the case.

All participants discussed the significance of patient interactions. The relationships are "intense and condensed," more impactful than the relationship the patient might have with their primary care provider or even their surgeon. The words "honor" and "privilege" were commonly heard when participants shared experiences of caring for patients at their "most vulnerable moments."

Gender Awareness

Participants described gender affinity, both conscious and subconscious, toward women mentors and role models, although not exclusively. Male mentors did play a supportive role for some participants, often those pursuing male-dominated subspecialties such as cardiac, critical care, and/or research endeavors. Participants more often referred to women mentors by their first name (eg, Elaine and Susan). By contrast, male mentors were referenced by last name (eg, Dr Jones and Dr Smith). This phenomenon may represent societal stereotypes often experienced by women professionals[16,17] or simply a comfort and familiarity between same-gender mentor-mentee dyads.

Various forms of gender bias were recognized by all participants. Some described conscious biases, reporting direct mistreatment. Many described an exclusive culture in the operating room (OR) that perpetuates preferential treatment toward men.

Participants shared concerns that colleagues, surgeons, patients, and family members expect less skill and/or competence based on gender. As such, participants were concerned about burnout in themselves and their women colleagues. Society asks women to give more, such as extra energy

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to navigate social interactions, repeatedly prove their competence and value on the team, and suffer the preponderance of exclusive cultures.

Pathway Support

No one reported anesthesiology as a required course in medical school. Shadowing opportunities were student initiated, exploring an unfamiliar specialty during the preclinical years. A few recalled an "anesthesia lecture" that piqued interest, but most found anesthesiology during the clerkship year during surgery and/or obstetrics/gynecology rotations.

Mentors and role models were important for continued interest, pursuit, support, and success along the career journey. Mentors were often senior faculty; however, we found evidence of near-peer mentoring among medical students and residents. Residents, possessing recency, were able to provide targeted support for medical students. The ability to see one's future self was a significant factor in ultimate career choice for most participants.

Learning Environment

Repeatedly, participants shared stories illustrating supportive, inclusive, learner-focused environments where they felt safe and comfortable in the presences of anesthesiology providers. They reported, sometimes to their own surprise, the extraordinary welcoming culture of anesthesiology departments and anesthesiology providers. This was true across institutions.

Participants described the ability to learn and grow whether rotating on anesthesia or not. They were challenged to ask questions and seek answers, and there was safety in not always knowing the answer.

Hidden Curriculum

The hidden curriculum, as described by Cowell in 1973, encompasses "that which the school teaches without, in general, intending or being aware that it is taught."[18] The hidden curriculum creates and supports an organization's structure and culture. Participants recognize the hidden curriculum in medical education. They question inconsistencies and inequities. What is "valued?" Who is "included?" What topics are discussed and with whom? Who gets assigned the difficult cases?

The ability to see women leaders in anesthesiology molded participants' views of the specialty as well as residency training programs. The participants were cognizant of the hidden curriculum and called for change in our specialty and the future of academic medicine.

Mystery Behind the Drapes

Participants unanimously described the mystery of anesthesiology, a clinical entity misunderstood by most outside the field, the depth and breadth of clinical acumen often underappreciated. Society's portrayal of "doctor" paints the pediatrician, family physician, or general surgeon. Most participants found anesthesiology by virtue of their own curiosity. Participants uniformly felt that they were "in on the secret." They also found value in the clinical competence of the anesthesiologists. Despite a strong belief in the skillset required for the role, participants uniformly described anesthesiologists as "humble" and "collaborative."

Many participants described the emotional intelligence skills required for managing interdisciplinary team dynamics in the OR or intensive care unit. Interestingly, participants identified their own emotional intelligence skillset when managing complex social interactions, such as nurse-physician interactions and complicated gender dynamics often encountered in the OR.

Discussion

We describe the self-reported experiences of 11 women anesthesiology physicians-in-training as they reflect on their career-choice journeys, sharing facilitators and barriers encountered. The authors identified 6 themes related to this social phenomenon.

Three themes have previously been reported: specialty characteristics, pathway support, and gender awareness. Using systematic literature review, Bland and Meuer developed a theoretical framework outlining career-choice influencers.[19] This framework was further adapted by Querido, who reports 5 career-choice influencers: medical school characteristics, student characteristics, student values, personal needs, and specialty characteristics.[14] Our findings corroborate the influence of student values, including personal preferences and patient interactions, as well as specialty characteristics, clinical experiences, role models, and mentors. By contrast, school characteristics did not emerge as influential. Anesthesiology, rarely included in formal curricula, is more often experienced in the periphery of other clinical rotations or as student-initiated experiences.

Theories developed through systematic literature review offer a big-picture framework; however, the individual perspective is lacking. In 2018, Querido conducted a qualitative analysis, exploring senior medical student experiences at 1 university in the Netherlands.[20] The analysis revealed 3 additional career-choice influencers: student-initiated information gathering, patient characteristics, and characteristics of teams and colleagues. Querido's study was not specialty specific; however, some of our results align with their findings. Many of our participants found anesthesiology through self-initiated exploration. Additionally, participants repeatedly described rewarding patient encounters. Although some participants referred to the team dynamics as challenging, the biggest challenges were related to gender bias and a culture of exclusivity. Most team interactions were welcoming and collaborative, specifically related to clinical collaborations and the inclusive learning environment. The studies outlined above are limited by the general scope of data collection.

A literature review limited to the specialty of anesthesiology identified 3 quantitative studies. Augustin et al reported the top 4 reasons for choosing a career in anesthesiology: (1) hands-on specialty, (2) critical care in the scope of practice, (3) invasive procedures, and (4) immediate gratification.[13] Although this study revealed valuable conclusions, it is limited by the survey design quantitative methodology. We posit that Augustin's career-choice influencers fall under the theme of specialty characteristics.

Two articles suggest that specific medical school activities increase awareness and

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interest in anesthesiology. Smyth et al reported that a preclinical experience at 1 Canadian university bolstered interest in the specialty.[15] A 7-year review of the Medical Student Anesthesia Research Fellowship revealed that 57% of students involved in the Medical Student Anesthesia Research Fellowship summer program ultimately pursued anesthesiology.[21] These latter 2 quantitative studies[15,21] offer specific interventions to increase interest and recruitment; however, applicability is limited. The literature review, as outlined above, offers no evidence of how or why women choose anesthesiology.

Three themes emerged as novel concepts in our framework: hidden curriculum, learning environment, and mystery behind the drapes. Hidden curriculum and learning environment are long-standing constructs that impact learning and career development.[22] Our data support the idea that both play an influential role in women's career choices and affinity for the specialty. Participants shared struggles with the hidden curriculum, including who is valued, represented, heard, and included. One might consider the hidden curriculum as a barrier to pursuing anesthesiology; however, the participants found inspiration to change the future, "make it right for everyone," and find a voice for change. In contrast to an unwelcoming culture in the OR, they found safety, inclusion, and educational support in the anesthesiology circle. This safe learning environment was consistent across institutions, programs, and anesthesia providers (residents, faculty, and advanced-practice providers).

Last, the mystery of anesthesiology adds to the initial allure as well as continued gratification. If more women understood the mystery behind the drape, more might consider the specialty. Anesthesiology remains excluded from the core curriculum in UME; yet, as a group of passionate educator-clinicians, evidence reveals that anesthesiologists find opportunities to connect with students. Clinical expertise brings valuable relevance to basic science content. Meaningful first encounters include faculty panel discussions, shadowing experiences, and the basic science classroom. Anesthesiology providers create and support an inclusive learning environment. From a gender equity perspective, there is work to be done. "There is certainly an extra challenge to break into a circle when you don't have that natural ability or innate feeling of belonging." Following the lead from our young women colleagues, conscious efforts should be made to include those who feel marginalized, excluded, and undervalued. As 1 brave woman shared, "When I see other [women] that are entering the OR for the first time, I feel this extra sense of duty or obligation to include them and make them feel more welcome."

Our study has limitations. Qualitative data from 11 women physician trainees do not represent the career-choice experiences of all women anesthesiologists. Qualitative research involves the intertwining of participants' experiences, investigators' perspectives, and the data. In the process of reflexivity, the investigators identify as women, 3 of whom were academic anesthesiologists with leadership roles in their institutions (BMM, ELS, and SLF) at the time of data collection and analysis. As such, the authors personal biases, perceptions, and experiences inspired the research question and influenced data collection and thematic analysis. Collectively, the 4 investigators are mothers of 7 daughters. The perspectives of men are not represented in this study nor the perspectives of those who do not conform to binary terms. Future directions may include qualitative exploration of other affinity groups or comparative analysis of the experiences of men and women; however, the purpose of this study was to investigate the experiences of women in anesthesiology and disseminate their voices.

Conclusions

Anesthesiology, as a specialty, is mysterious. It is this very mystery explored in a supportive and inclusive learning environment that attracts women trainees. When supported by mentors and role models, women are inspired to challenge the hidden curriculum of gender inequity and social norms, looking hopeful toward their future careers as physician anesthesiologists. Career choice is a dynamic, yet critical, decision with lifelong implications for the physician and health care systems. At the personal level, career choice impacts career satisfaction, income, work-life integration, and overall physician well-being. On the larger scale, specialty choice influences health care systems and population health. Planning for the health care needs of society must include adequate workforce planning with a deliberate focus on diversity, equity, and belonging.

Thus far, very little is reported on the stagnant representation of women in anesthesiology. We offer an exploration of the phenomenon of women choosing the specialty. Sharing stories and voices of women in anesthesiology is 1 step toward recognizing the valuable journey of women in our specialty. Leadership programs and sponsorship are integral in developing women leaders; however, more focus is needed at the early stages of career choice. Without such focus, the future workforce and leadership pool will remain unbalanced despite mentoring and development efforts.

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Abstract

Background: Women are underrepresented in the anesthesiology physician workforce. Additionally, recruitment of women into the specialty has been stagnant over the past 2 decades. Current evidence is lacking regarding how and why women navigate the career-exploration journey to find anesthesiology. The purpose of this study was to investigate the phenomenon of women choosing a career in anesthesiology, specifically identifying facilitators and barriers to career choice and professional identity formation.

Methods: Using constructivist grounded theory, we explored the self-reported experiences of women anesthesiology trainees, including resident physicians and senior medical students. Seven resident physicians and 4 medical students participated in the study. Through semistructured interviews, data collection, and iterative analysis, the authors identified codes and emerging themes, thereby advancing the understanding of the career-choice journeys of women anesthesiologists.

Results: Iterative analysis revealed 6 themes related to career-choice journeys for women in anesthesiology. Three emerging themes have been previously described in career-choice reviews (specialty characteristics, gender awareness, and pathway support). Additionally, 3 novel themes emerged from our study population (hidden curriculum, learning environment, and mystery behind the drape).

Conclusions: The findings of this study highlight factors and experiences that impact career-choice decisions for women who choose anesthesiology. Only in understanding the how and why of women physicians' journeys can we hope to build on this knowledge, thereby striving to develop educational, clinical, professional, and personal experiences that support women along their professional journeys to ultimately find anesthesiology.

Keywords: Anesthesiology, gender equity, career development, physician workforce, graduate medical education

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Tables

Table 1. *Emerging Themes and Codes*

Theme	Codes
Previously Reported	
Specialty characteristics[13]	Variety, clinical urgency, immediate gratification, patient interactions
Gender awareness[14]	Affinity, roles, mentorship, bias, burnout
Pathway support[15]	Peripheral exposure, shadowing, mentors, role models, relatedness
Novel Findings	
Learning environment	Inclusion, safe space, learner centered, advocacy
Hidden curriculum	Leadership, culture norms, value
Mystery behind the drapes	Misunderstood, mystery, emotional intelligence, humility, competence

Table 2. *Participant Quotes*

Specialty Characteristics
I'm not making a change that I'm going to see 6 months down the road. I can make change that I will be able to fine-tune in real time.
I did a really good job, and my work is going to stand up and last through the whole case.
…the patient is coming to a very scary moment in their life. We can be there for them…in that moment, there is a big emotional component…a connection.
Gratifying…humbling
Gender Awareness
Now that I think about it, all the mentors who come to mind were women
You're a DO and a girl and you think you can be an anesthesiologist? You might as well just quit now.
With the exception of MDs, the OR culture is very female dominant…Sometimes the female energy can be extremely challenging for us as female residents and for our female medical students, much more challenging than it is for our male residents and students who can just walk in and be welcomed.
I get tired of society and cultural expectations that we are always smiling and kind and polite…
These things will contribute to burnout. I will burnout faster than my male colleagues…it's not the work itself that wears on me. It's the subtle digs…
Pathway Support
On OB/Gyn and Surgery, I found myself talking to the anesthesia people.
Anesthesiology wasn't even on my radar, but she [faculty member] was the kind of person who would text me and say, "Let's grab coffee." We had this very meaningful mentor-friendship where she is the person I go to about anything.
I can remember her [resident] helping me practice my presentations for rounds and making sure I knew my patients, especially if we had an anesthesiology attending in the ICU that week.
I think I could be Dr X in my future…and now I feel like I'm sort of turning into her, which is a privilege actually…I think just being around her and seeing her life helped me envision my own life as an anesthesiologist.

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Learning Environment
I wasn't even on my anesthesia rotation, and they included me…How special to have people in the specialty willing to support a random person in that way.
I remember one of the anesthesiologists I met…She wrote down her phone number and said "When you get there, here's my number, call me. We'll talk about how you navigate these things." And this was someone I never worked with before, AND I was on my surgery rotation!
It's not overwhelming teaching like pimping. It's more just genuinely teaching and including learners for the sake of learning. I think that's the personality of an anesthesiologist.
But it wasn't about ego…It wasn't about the stage.
Even with other students who are rotating on OB/Gyn or Surgery and obviously NOT going into anesthesia, they tell me they love the department too because they feel like they got this great teaching.
Hidden Curriculum
Who are you seeing on interview day and who are they valuing?
During one of my interviews, the PD [program director] said "Ok, for all you women out there…" and then proceeded to talk about parental leave policies. Seriously!!?? I'm sorry. Women are not the only persons who might need to think about parental leave. Men have children too! I found it weird and uncomfortable. My response should have been…"Make it right for everyone"…I didn't rank that program.
Seeing women in the leadership roles, or not, definitely impacted my rank list.
Sometimes leaders have official titles such as chair or PD, but other times, simple actions are interpreted as leadership quality.
In the heat of the moment, during the clinical crisis, she took on a leadership role and put everyone else at ease.
You wouldn't expect anything different that a man or woman can occupy any job or role if they are qualified.
Can I find a role in academics, in education, where I can feel valued? Is education valued? I think that would be the bigger factor, more than gender. Although I don't think the issues are completely exclusive…Who is valued? Men or women? Research or education?
Mystery Behind the Drapes
I didn't know the doctor path could look so different. I was curious about the operating room because I had never been in one.
What we do is so important, and in some ways a bit of a mystery to some people…I like being behind the scenes where we have a lot of power and control and a job that people undervalue because they just don't understand it and I'm okay with that.
And we're the people who show up when there is a code…The anesthesiologist shows up and you always hear people say "Oh, thank God."
Everyone seems to be really smart, but still very humble and very welcoming…It's probably one of the more collaborative specialties where everyone is so comfortable with asking for help, which I really appreciate.
We notoriously hear people say, "anesthesiologists aren't people-people." I can't help but to think that the most effective anesthesiologists are anything but people managers…that's what we do, we read the room.
I don't think my male mentors or male colleagues always get it. They don't see things, like how I interact with nurses and the way I phrase things when I am asking them to do things. The way I choose my words is very different than my male colleagues and the words are received very differently.

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Appendix

Appendix 1. Women in Anesthesiology: Semistructured Interview Template

Preface: First and foremost, thank you for finding time to meet with me. I know your free time is limited and I appreciate the hour you have offered to give me.

As outlined in the recruiting email, the goal of this project is to better understand how and why women decide to pursue a career in anesthesiology. Through this interview and others, I hope to understand the personal career-development journeys of women anesthesiologists. Your journey is unique and valuable. There is no right answer. Feel free to answer the questions in your own words.

A transcription of this session will be recorded for review and analysis; however, your identity will remain confidential. You may withdraw from this research project at any time.

Can I answer any questions about the project before we begin?

Questions

1. Share with me your first encounter with anesthesiology.
2. What were the experiences and opportunities that drew you to anesthesiology?
   - People: you enjoy working with, you see yourself in them
   - Problems: you enjoy solving
   - Patients: you enjoy caring for
   - Passion: what inspires you
3. Did you have reservations about pursuing anesthesiology? How did you navigate these concerns?
4. Tell me about the mentors and role models in anesthesiology who helped shape your career choice decision. Who? What? How? When?
   a. Did gender identity impact your choice of role models and mentors?
5. How did gender impact your decision to pursue anesthesiology? Do you think your classmates had similar concerns pursuing other specialties?
6. Keeping your experience in mind and cultural expectations surrounding gender and professional identity, how will this impact your role in the field of anesthesiology in the future? Have you heard of "imposter syndrome" and will this impact your career aspirations?
7. What advice do you have for residency programs who want to recruit more women to the specialty of anesthesiology?
8. What advice do you have for female medical students interested in anesthesiology?
9. Are there questions you were expecting me to ask regarding your career-choice journey?
10. What inspired you to participate in this research study?
11. Is there anything else you would like to share with me?