

Shaping Pathways from Community College to Medical School: Examining the Validating Perspectives of Academic Advisors and Counselors

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ABSTRACT

The negative correlation of community college enrollment and medical school admission (U.S.) is well documented in the literature. U.S. medical schools face challenges in recruiting diverse applicants, and community college students are often overlooked. This oversight is perplexing, as community colleges generally support a higher percentage of racially and socioeconomically diverse students compared to four-year institutions. This exploratory, qualitative research study addresses systemic barriers for pathways to U.S. allopathic medical school admission through the voices and experiences of community college advisors and counselors ($n = 14$) who work with pre-health student populations. Using validation theory to uncover the experiences of pre-health advisors and counselors, these primary themes emerged: (a) participants' high capacity for and interest in serving as "validating agents" for medical school pathways; (b) common structural challenges to enact roles as validating agents for medical school pathways; and (c) key "supportive opportunities" for validating medical school pathways. Validation theory posits benefits from "validating agents" who enact supportive actions that foster academic and interpersonal support for others such as students. We argue that advisors and counselors in this study had the capacity to serve as validating agents for their students' careers. Implications from this study include the importance of mentorship from four-year institutions, the potential for impactful partnerships between medical schools and community colleges, and the call to action among medical school admissions officers and leaders to view community college students from an asset- versus deficit-based lens.

PLAIN LANGUAGE SUMMARY

Medical school leadership in the U.S. maintain public commitment to greater access and inclusion for historically underrepresented groups along racial/ethnic and socioeconomic lines; yet, national data on medical school application, offers of admission, and matriculation reflect a historic and persistent majority White and high socioeconomic preference. Despite persistent challenges to diversify medical schools, community colleges remain overlooked as a potential talent pool – despite data that shows how community colleges serve a more racially and socioeconomically diverse student population. Research shows that enrollment in community college means applicants

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will have a lower chance to gain admission to medical school. Due to the lack of research on connections between community colleges and medical school admission, our study addresses how pathways to medical school can be more supportive for students who begin in a community college setting. Specifically, this study focuses on the academic advisors and counselors that work with “pre-health” students in community colleges. For this study, we analyzed interview data from 14 participants who were recruited from California and Illinois. Data analysis resulted in primary themes: (a) participants’ strong interest in serving in a supportive for their students’ medical school pathways; (b) common challenges to serving in supportive roles due to the structure of advising systems and appointments in their community college setting; and (c) shared viewpoints for how to best support community college students’ pre-medical student pathway. The researchers see directly relevant, actionable implications from what they learned from participants in relationship to existing research on this topic.

Introduction

Despite increased emphasis on recruiting and retaining students whose racial/ethnic identities are underrepresented in medicine (URiM), recruiting and enrolling diverse student cohorts remains a significant challenge (Capers et al., 2018; Grbic et al., 2019). The Supreme Court decision (*Students for Fair Admissions, Inc. v. President and Fellows of Harvard College*, 2023) in June of 2023 banning the use of race and ethnicity in admissions represents another setback in the goal to diversify the nation’s physician workforce. The Association of American Medical Colleges (AAMC) continues to advocate for increasing diversity among medical physicians in the United States (U.S.); yet the active physician workforce remains overwhelmingly White and from the highest socioeconomic background quintile (Association of American Medical Colleges [AAMC], 2021; Le, 2017). Research in medical education suggests that increasing racial/ethnic diversity among physicians combats health disparities (Jackson & Gracia, 2014; Marrast et al., 2014). Further, the presence of diversity in medical school cohorts fosters cultural competence outcomes for all students (Diaz et al., 2020; King et al., 2019). Some medical education scholars argue that community colleges serve as a valuable source for diversifying medical school cohorts, as they are often a critical postsecondary gateway for students from racially and socioeconomically underrepresented backgrounds (McFarland & Pape-Lindstrom, 2016; Saguil & Kellermann, 2014). In 2014, Talamantes et al. (2014) cited 24% of community college students as Hispanic; in 2022, the American Association of Community Colleges cited an increase to 28% of all community college students. The Hispanic/Latino population is 18.9% of the U.S (U.S. Census Bureau, 2022) compared to 13% of students enrolled in four-year institutions (Talamantes et al., 2016) and 11% of medical school matriculants (AAMC FACTS, 2022). Hispanic/Latino students comprise a disproportionate percentage of students enrolled at community colleges (American Association of Community Colleges, 2022; Talamantes et al., 2014). Similar matriculation and enrollment patterns are observed for Black and Native American populations (AAMC Facts, 2022; American Association of Community Colleges, 2022; U.S. Census Bureau, 2022).

Saguil and Kellerman (2014) argues, “if we are serious about lowering the social, racial, an economic barriers to medical school, we must start viewing two years of premedical education at a community college as an asset rather than a liability” (p. 1591). Additionally, research indicates that physicians who first attend a community college are more likely to practice medicine in underserved communities – a national need (Talamantes et al., 2018); yet, they have less support as a pre-medical student (Talamantes et al., 2016) and are less likely to be recruited and accepted to medical school than peers who begin at a four-year institution (Epler et al., 2023; Saguil & Kellermann, 2014; Talamantes et al., 2018) – even after controlling for other key predictors such as GPA and required Medical College Admission Test (MCAT) scores (Saguil & Kellermann, 2014).

On a larger scale, nearly 80% of community college students initially indicate a plan to transfer to a four-year institution; yet, only approximately 30% of students actively matriculate (Nahlik et al., 2023). The capacity for a community college to focus on supporting student pathways to careers such as medicine is also challenging due to the many competing aims of these institutions (Levin, 2001, 2007, 2017). Community colleges can provide access to higher education for millions of students each year, but they must serve the differentiated needs of their students who are not all university-bound (Levin, 2001, 2007, 2017). Despite the unique set of challenges for pre-medicine students who began their higher education careers in a community college, peer and advisor mentorship can effectively increase the rate of medical school admission (Epler et al., 2023). For instance, after a partnership between students at the University of New Mexico School of Medicine and Central New Mexico Community College was forged, the mentees reported a strong desire to gain access into medical school, with an overarching interest in family medicine (Epler et al., 2023). In order to understand how these relationships influence likelihood of medical school admission post-community college, it is imperative to learn from advisors working with students on a personal level. According to Light (2001), “Good advising may be the single more underestimated characteristic of a successful college experience as part of the justification for looking at the role of pre-medical advisors.” Moreover, advisors balance their students academic needs while validating their interpersonal ones, which helps create a meaningful space for students to strategize on a path forward (Petrucci & Rivera-Figueroa, 2023).

To explore the influence of community college attendance in shaping pathways to medical school admission in the U.S., we center the role and perspectives of pre-health advisors and counselors. We use the term “advisor” to encompass the spectrum of pre-health advisors and counselors who are the subject of this study. Drawing from validation theory and the concept of “warming up,” Martinez and Elue (2020) suggest that community college advisors and counselors provide both affective and informational value for students as they consider strategies to meet career goals related to both baccalaureate and post-baccalaureate matriculation. Similarly, in examining medical school pathways among racially minoritized students, Hadinger (2017) found consistent connections to positive, encouraging advising during undergraduate enrollment. Such orientations toward advising significantly impacted minoritized students’ decision to apply and enroll in medical school (Hadinger, 2017). Building from this set of research, we present a qualitative, exploratory research study where we seek to understand the role of advisors in U.S. community college settings. Thus, the primary research question asks, *How, if at all, do community college pre-health advisors and counselors mediate advisees’ pathways to medical school admissions?* We seek to foreground the voices of the advisors and counselors in our findings.

Theoretical framework

To frame our exploration of the role of community college advisors and medical school pathways, we applied the “validation theory” framework (Linares & Muñoz, 2011; Rendón, 1994). Related to the construct of self-efficacy (Bandura et al., 1999), “validation” is defined as a supportive and confirming process initiated by validating agents (e.g., pre-health advisors) who foster two forms of “validating efforts” – academic and interpersonal. Academic validation involves supportive actions by institutional agents that foster academic development – such as but not limited to providing resources and information that empower students, sharing meaningful feedback on academic progress, and offering individualized attention to students’ career goals. Interpersonal validation requires validating actions in support of sociocultural identity development – such as managing stressors to perceived challenges, encouraging reflection, supporting adjustment, and encouraging student persistence such as in a higher education environment. Validation is particularly valuable for students who experience stressful incongruence between culturally-centered strengths and institutional norms grounded in dominant perspectives.

Methodology

Given the exploratory nature of the study, we use a basic qualitative approach (Merriam, 2009) to analyze pre-health advisors' experiences in community college settings. According to Merriam (2009), basic qualitative studies constitute "the most common form of qualitative research found in education" (p. 23); and, "Here [in a basic qualitative study] the researcher is interested in understanding the meaning a phenomenon has for those involved" (Merriam, 2009, p. 22). Assumptions for qualitative research also include "understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (Merriam, 2009, p. 5); and, "attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2005, p. 13).

Participants

Following IRB approval, a purposeful sample of participants was recruited via electronic mail based on these criteria: individuals actively working full- or part-time as a community college advisor or counselor (or equivalent title); an advising assignment of pre-health students in a dedicated or partial capacity; and residence in the states of California or Illinois (per the researchers' proximity to those states and the original plan to conduct interviews in-person). Participants who consented to the IRB-approved study were invited to share the research opportunity with colleagues; thus resulting in additional snowball sampling of potential participants. Study recruitment yielded 38 participants ($n = 20$, CA; $n = 18$, IL) who completed the study questionnaire; and 14 participants ($n = 6$, CA; $n = 8$ from IL) who completed a one-on-one, semi-structured interview. Interview participants represent 12 unique community colleges—8 from CA; 4 from IL – and were drawn from an original pool of 116 urban and suburban institutions. The list of institutions was the result of an Integrated Postsecondary Education Data System (IPEDS) IPEDS search followed by manual research on each institution's website to determine what institutions appeared to have a pre-health or related track at their institution. Per IRB approval, researchers used publicly available central or individual contact information to reach out to potential participants via e-mail as mentioned above. One limitation of this study is the inability to compare participant data along social identity lines (e.g., gender identity, race/ethnicity, sexual orientation), as that information was not deemed critical for this exploratory study. Another limitation is the decision to limit this exploratory study to two U.S. states.

Data collection and analysis

The primary instruments for data collection were a 32-item electronic questionnaire and a 10-item one-on-one, semi-structured interview (see [Appendix A](#) for interview protocol). The findings in this study are based on the interview data, specifically; and all interviews were conducted virtually due to the international COVID-19 pandemic. Both the questionnaire and interview protocol were developed by the research team after triangulating the data with extant literature on (1) disparities in medical education pathways; (2) the role of academic advising in community colleges; and (3) the team's professional experience with community colleges and/or medical school. All interviews were audio recorded and transcribed verbatim. To enhance study trustworthiness and credibility, all interview participants were invited to review their transcripts and edit or redact any data. Our four-person research team engaged in a systematic coding process to analyze the interview data; and each researcher kept an audit trail and memos and engaged in critical researcher reflexivity (Merriam, 2009). For the first stage of open coding the interview data, one member of the research team read and re-read all interview transcripts. Subsequently, preliminary codes and sub-codes were developed and shared with two other members of the research team. These two researchers coded all interview data using the preliminary codes as a basis for their analysis, and they added or edited any codes as deemed necessary. As a final state of coding, an external auditor read all

interview transcripts to determine any new or nuanced interpretation of the data relative to the preliminary codes. Following all rounds of coding, the full research team – including the external auditor – met for an analytic dialogue regarding the primary themes and sub-themes that emerged from the data. This dialogue resulted in intercoder agreement (Creswell, 2014) for the interpretation presented in this study.

Limitations

A few cautions should be noted when considering findings and analysis. Due to restrictions related to the COVID-19 pandemic, all interviews were completed virtually and researchers did not have an opportunity for observations of practice. As such, our data is limited to the perceptions and reflections of advisors captured via technology. Similarly, while we targeted states with racially diverse populations and comprehensive community college systems, we did not collect demographic data on the exact student population served by our participants. Despite these limitations, the interview protocol was designed to draw participant focus on issues related to racialized disparities in medical school pathways and the critical role of advisors in serving as a validating guide from community college to the medical field.

Findings

Three primary themes emerged for validating medical school pathways for community college pre-health advisors or counselors in this study: (a) participants' high capacity for and interest in serving as validating agents for medical school pathways; (b) common structural challenges to enact roles as validating agents for medical school pathways; and (c) key "supportive opportunities" for validating medical school pathways.

"Validating roles" and participant motivation to be an advisor

How "validation" is understood in the literature was reflected in participants' motivation to become a pre-health advisor. In line with the literature, participants described capacity for "validating efforts" in both academic and interpersonal spheres of students' lives.

Positive impact on participants' formative career experiences

For some participants, motivation to support students' academic and interpersonal needs as a pre-health advisor stemmed from formative experiences with community colleges at one or more points in their career. Alice described how she grew up with a family member who taught at a community college. When she pursued her master's degree, she completed an internship focused on transfer students in a four-year university. She shared how "those two experiences [family member connection, internship]" drove her interest in supporting community college students. Furthermore, after Alice gained experience at an elite, private, four-year university in the U.S., she "very much missed working with more non-traditional students" and reached out to colleagues who could help her transition back to a community college setting.

Three participants attributed their interest in serving community college students as advisors due to their past enrollment in a community college. Mr. E said courses in his local community college were more affordable compared to his four-year institution. The option to transfer final credits from a community college to complete his bachelor's degree allowed him to graduate on time; and experiences with his community college advisor ultimately led him to an academic advising job at that same institution. Yolanda "had such a phenomenal experience" taking courses herself at a local community college. Andrea began her higher education journey as a community college student prior to transferring to a four-year university. She attributed "my

own community college experience” to her ambition to be a pre-health advisor. Francisco remarked,

I was a community college student myself. I attended the same community college [as where he currently worked as an advisor]. So I was born and raised in this area, and I came back after transferring and doing my bachelors and my masters . . . I love the community colleges. Every student you meet with is totally different, and you just don't get that diversity at a [four-year] university.

Commitment to social justice

Other participants viewed their work in a community college setting as a way to contribute to social justice efforts in education – which was a deeply personal dimension of their work. In response to an interview question regarding how she came to her role as a pre-health advisor, Fatima shared,

I knew I wanted to somehow contribute to what I would label as a social justice cause . . . In other words empowering and making resources accessible to individuals who might come from disadvantaged backgrounds and the whole gamut of what that looks like. In my younger days, I started volunteering in non-profits and getting involved in that capacity and quickly realized that education, in my opinion, was the key to social mobility.

Kat discussed how she “really was intentional about working at a community college to help students of color” to “reach higher degrees” after they completed a community college program. Kat emphasized, “I know there's a need there; especially working in STEM grants previously with students of color. I see the power that going into those [medical] careers has on that student and their family and the profession in general.”

Response to past experiences as an advisee

Additional participants were inspired to pursue a career as an advisor in a community college due to an absence of advising support in their higher education journeys. These participants viewed their role as a pre-health advisor as one way to rectify a lack of support as former students. Jace said she wrote about why she “wanted to be an academic advisor at a community college” in her graduate school application essay; in part due to her desire to “help out students” and “build more of a relationship with students.” She elaborated how she “had no guidance from an academic advisor” during her higher education experience; so she “wanted to make it right” for her students. Similarly, OJ said,

I was drawn to higher education because of a very negative experience that I had in my youth. Transferring from a city college to a university. I had a very negative experience where I was told by an advisor that I should take one or two classes so as to not stress myself out.

Benjamin detailed, “One of the biggest reasons why I'm an advisor now is because I had little to, well, I'm just gonna say – I mean, I had no, no help whatsoever when I was going to [my university].” Luna described how she initially did not “see myself in any of the [academic advising] positions I'm in now, because nobody around me had those.” That lack of support in her higher education experiences led Luna to approach advising interactions with her students differently. She shared how she encourages her students to think beyond just obtaining employment. She asks her students, “Hey, let's plan what else [beyond course selection] we're gonna do in the future.” Of her experiences with advisors, Olivia said,

I felt the need to help the community college population the most. I was exploring my different options. I was also a science major when I first started, a chemistry major . . . as a first-generation student, I felt really lost like a lot of our students, and I really identified with that . . . I felt like if I had the right mentorship and the right people to talk to, my trajectory might've been a little bit different.

An outlier in this theme was Ana, as she had a positive experience with advisors that ultimately led her identifying a passion for supporting students as a pre-health counselor. At her institution, she primarily supported pre-medicine, pre-dentistry, pre-veterinary, and pre-pharmacy students. She

also shared that she was at one point a pre-medicine student which drove her specific interest in working with her pre-health student population.

Common challenges for enacting validating roles

While study participants' roles as pre-health advisors and counselors coincided with the strong motivation to serve as validating agents for pathways to medical school, common barriers to advisors enacting these roles as validating agents for their students emerged.

Structure of academic advising appointments

The structure of advising systems in participants' community colleges presented challenges to validating students' academic and/or interpersonal matters. When participants reflected on the function of their role as a pre-health advisor – aside from their original motivation for pursuing a career as an advisor – participants remarked on how the structure of their advising positions was often more conducive to serving as “facilitators” for course planning decisions and program completion. One participant stated, “Really our job is to serve the students, you know, make a plan, talk to them about requirements, and moving on . . . We're not allotted a lot of time to then, to go into way deeper conversation.” The ratio of advisors to students was also cited as a structural limitation to enacting validating roles. Andrea cited “8 or 9” advisors for their 10,000 student population. Yolanda reported that while they did not follow a traditional caseload model, they have “around 1,000 students per counselor.” Other advisors indicated they do not always have comprehensive data about a student that would signal a need to validate a career in medicine. Their institution's registration systems did not include explicit fields for students to note areas of pre-professional study such as pre-medicine; rather, the data to which participants had consistent access reflected only the specific degree program in which the student was enrolled at the community college. Francisco elaborated, “And so, it's something that we're working more toward – to require students to update their goal . . . whether it's pre-med or something else. Like, how do we identify them?”

Benjamin spoke to the structure of his advising appointments related to realities of his workplace. While he maintained that he cares about students' longer-term career goals, he shared, “Completion [of your community college program] is tied to funding dollars If we have transferring services, and if you transferred . . . that's great. But as long as you complete, that's fine.”

Gaps in knowledge about medical school admissions pathways

Another common challenge across participants for enacting validating roles for careers in medicine was their self-reported limited knowledge about the academic requirements for a pre-medicine student in a four-year context and/or for competitive medical school applications. For Marissa, a collaborative approach provided insights into specific information to share with students. She shared, “I pair with the health and science team. Other than that, I don't have any formal training just for the medical field.” Alice – who was an outlier in terms of her knowledge of pathways to careers in medicine due to a family member's experiences – emphasized, “I just don't know if advisors across the board fully grasp that pre-med is not a set major.” This gap in knowledge about academic requirements for pre-medicine or medical school admissions pathways intersected with the role of transfer policies from community colleges to four-year institutions. While advisors could offer assistance to their students for transfer processes in general, a limited understanding of the roadmap for completing a baccalaureate degree at a four-year institution that is aligned with medical school admissions expectations limited their validating potential. Francisco explained,

I have not gone that deep into it yet [pre-medicine advising in a four-year setting]. Mainly because I'm aware that a university, once they transfer, they're gonna be talking to them, more than likely, about that piece as they're talking to them about, “Okay, your last two years, junior, senior year, these are the classes, this is the timeline of where you're gonna have to be doing to prepare for your MCATs” and all that. So I understand that- that that's usually a process.

Of a limitation for how to best advise his students, OJ said, “If a student wants to do pre-med, would it make more sense for them to major in biology or would chemistry be just as good or maybe even better?” Fatima spoke to her desire to gain more knowledge about medical school admissions processes for her students. She said, “I want to have a picture of how to lead a student from the community college setting from their first semester . . . build the groundwork necessary for them to go on and be successful and attain their goal.” Fatima continued,

It’s going to sound silly, but even as simple as what does the interview look like? What kinds of questions are they asked? Is how they dress an important part of the selection process? You know, are you looking for extra-curricular involvement? . . . Just things that would help me coach and prep; then in terms of actual academics . . . I always wonder about Calc . . . is there a preference for them to also take Calc 2, Math 146? Does it not matter?

Andrea spoke to a “cooperative work experience program” where her students can gain more experience for careers as nurses or medical assistants; however, no such opportunities existed for those interested in becoming physicians. Andrea said, “We’ll talk about common med school pre-requisites. If they know they want to go onto professional medical schools, we really kind of just rely on that individual education plan.”

How to best advise their student population

Advisors also shared their general awareness of medical schools as an elite, very competitive career pathway. They wondered whether medical schools’ measurement of academic merit and preparation would attenuate their validating role as a pre-health advisor. Olivia shared,

So one of the challenges that we face is students who start off in community college and don’t do so well And then they all of a sudden turn around, maybe five years later, and then they’re doing really, really well One of the most challenging things is med schools can’t look past that—that first part of college.

Upon reflecting on his student population – in comparison to his estimation of medical school admissions requirements – Francisco contemplated, “Volunteering work, work experience and volunteering; it seems like they [his students] don’t ever seem to have time to do that, ‘cause they’re working a regular job that’s maybe not related to health, so then they don’t have time.”

Another advisor spoke to the cost of medical school being a potential limitation to their ability to serve as a validating agent for medical school pathways. Andrea said,

A lot of students just will not pursue some of these longer programs of study because of finances. And without the guarantee of scholarships . . . If they don’t see that [scholarship funding] for professional programs, it’s not going to be something they’re thinking of. And then also, academic support because the prerequisite courses are more rigorous . . . oftentimes our low income, first generation college students . . . they’re expected to do a lot to support their families, and they just don’t have the time to be able to really focus on their classes. Or they need to make some sacrifices to make the time. But doing that equation is sort of like how much, you know, I can sacrifice . . .

Andrea echoed the need for “meaningful financial aid reform” and for “making the [pre-medicine] pathway very clear [for community college students] and making it very affordable.”

Opportunities to support advisors’ validating roles

Participants also identified the need for resources to demystify the application process and connect students to accurate information and potential role models who have successfully navigated the community college-to-medical school pathway.

Openness to proactive involvement from medical schools

Francisco suggested that university systems that have a medical school could “come and have a booth, a table, and various breakout sessions” for his advisees at his community college. Jace explained that it would be “very helpful” for her and her students to visit a medical school in-person. Her recommendation was based on her experience with advising pre-health nursing students where “we have panel

discussions – that kind of thing.” Jace said that “hearing from students that are already in medical school programs” who were “somebody that went to [our community college]” would be ideal for her advisees. Other advisors shared this recommendation. Fatima also saw a need for more connection between her students and medical schools given her prior experience with a nursing program that hosted an on-campus visit. Of the nursing partnership, she recalled,

... the idea was to have someone from [the nursing school] with internal knowledge come into the college system so that we could create a pipeline to have community college students get exposure to the campus; to just physically even walk on campus ... it helps it make it more real.

Per the “lack of peer mentorship” for community college students aspiring to medical school pathways, OJ was interested in proactive involvement from current medical school students who began in a community college setting. He said, “A lot of times, I can talk about a school’s medical program. I can talk about it to death, but if I can make specific references to students that I have in that program ... it gets a lot more buy-in on the student’s behalf a lot faster.” Luna noted resource limitations to initiating a partnership with a medical school. “I don’t think right now we have that sort of funding and the time to build a partnership with a closer medical facility to give students that opportunity even to just job shadow,” she said. She continued,

They [her students] cannot go to these medical professional places and say, “Hey, I’m a student at [name of institution], can I job shadow?” To request like an informational interview is really hard in our area ... I actually do not have like a direct connection to like a pre-medical association, things like that.

Other advisors expressed strongly that opportunities for exploration of career fields in medicine and science were needed at their schools. Their students lacked resources often provided at universities such as internships, shadowing programs, guest speakers, well-funded clubs and organizations, research experiences, mentoring, and service learning partnerships that are fundamental in both exploration and preparation to compete for admission in the post baccalaureate years.

Interest in enhanced connections with four-year advising counterparts

Several participants saw benefits to meeting their pre-health advising counterparts who worked in four-year institutions. Oftentimes, they were not certain as to whether their advisement – such as for course selection in math or science – was what would be endorsed at a four-year institution for someone pursuing pre-medicine even if they knew the credits would transfer. Other times, they were unclear as to why former advisees appeared to not have the right information about a pre-medicine pathway after they transferred. Andrea shared, “I have a surprising number of students who come back to the community college asking about different graduate programs. And it’s always a little like, “Ah, why didn’t you get this from your university?” OJ echoed, “And you’d be surprised how many people graduate, and then they go to university and then they contact me back for help in picking classes.” He continued, “It’s always much more effective for me to be able to make a handoff or to make a recommendation for someone at that university level who knows a little bit more ...” Marissa described a disconnect between her proximity to helping students transfer to a four-year university and their subsequent journey toward medical school. She detailed,

For my experience, I only have transfer experience ... I wasn’t able to kind of go that [much] into medical school with them, because they have to go for the bachelor degree and then apply for the medical school ... we only can help them to transfer ...

Other participants described a desire to connect with four-year advising counterparts to help their students identify research opportunities – given their general awareness of research being one dimension of a competitive medical school applicant. Olivia stated, “One of the difficult things is research opportunities ... And because they [transfer students] have such a short amount of time, once they transfer out, they may not even have this opportunity to explore research.” She spoke to her attempts to leverage her college’s life sciences faculty who have contacts at four-year institutions. However, sometimes “we’re just blindly emailing people just to see if they have lab positions available

for our community college students.” Alice underscored how better connections with four-year counterparts could potentially buffer against persistent complexities to the transfer process. She described a project she was assigned to related to transfer course articulation – or, the process for how courses from one institution transfer to another in a systematic, rules-driven manner. She said, “that was in 1992 to 1994. And here we are, however many years later, and we’re still dealing with issues of course articulation and evaluation.”

Finally, Ana shared how grant funding for two STEM programs at her institution allowed for greater support and connection with four-year institutions. Students at Ana’s institution who applied to one or two grant-funded STEM groups had the opportunity to connect with speakers and admissions representatives from local universities to prepare for “what they need to do for the next step.” Her students were also connected to pre-medicine students and research laboratories at a nearby four-year institution to “get informed of what’s out there in terms of what they can do with their STEM degrees after they’ve received their bachelor’s.” Ana’s funded programs also included programs for students’ families wherein “whomever is supporting the students in their education” could learn more regarding “the rigors of a STEM field”, discuss financial aid options, and more. An additional built-in feature of these sessions was a bilingual option and the knowledge that a lot of the students were first-generation college students. Therefore, while the other participants in this study did not have access to connections to four-year institutions like Ana, her experience is an example of how such a partnership functioned.

Discussion and implications

Through the theoretical lens of validation theory, this exploratory study examined community college pre-health advisor and counselor roles for supporting medical school pathways. Participants were primed to engage as validating agents in their advisees’ longer-term career goals. The pre-health advisors and counselors in this study reported highly personal connections to their work with community college students, specifically – be it past experiences in community college courses, a commitment to populations that are served in their community colleges such as but not limited to students of color, among other motivations. Though participants exhibited a capacity to serve as validating agents in their advisees’ course planning and career exploration, they faced common challenges in doing so. As discussed, the baseline structure and purpose of their advising responsibilities was more conducive to transactional conversations about course-selection and program completion; not nuanced, in-depth discussions about how their community college experience connects, if at all, to longer-term career goals. High student to advisor ratios, 30 minute average advising appointments, a limited database in formation about their students’ academic and/or career interests, and limited time and/or resources to understand up-to-date information about medical school admissions requirements or pre-medicine requirements in four-year institutions hindered advisors’ ability to maximize their roles as validating agents for their students. This pattern has significant implications for supportive community college students’ pre-medicine pathways, as identity development perspectives among STEM majors – including pre-medicine – suggest that blending academic-based identities with personal backgrounds foster academic and career success among minoritized students (Carlone & Johnson, 2007; Dou et al., 2021).

This study also uncovered structural challenges ingrained in the transfer and medical school application process – additional limitations to pre-health advisors’ ability to serve as validating agents in their students’ career pathways. This finding suggests that positive reinforcement of racially minoritized students (Hadinger, 2017) – such as through the validating role of an advisor – is a necessary but insufficient form of support if students are unable to successfully navigate normative policies and practices that disproportionately disadvantage community college students.

While several common challenges to serving as validating agents in community college students’ pre-medicine pathways were identified, advisors shared similar views on how to mitigate existing barriers to both their ability to support students’ academic and interpersonal needs and to their

students' ability to have some agency over their career path. The pre-health advisors in this study expressed high interest in learning from and with their four-year advising counterparts. Though some four-year university systems have predictable and publicly available policies for how community college credits transfer into their institution, that is not the case for all colleges and universities. Furthermore, even when general transfer policies were clear, it was often a black box as to whether math or science courses that a student took in their community college would be the most helpful toward a pre-medicine pathway in a four-year university. Echoed by existing literature, another opportunity that participants identified was better connecting any community college students who successfully navigated a pre-medicine pathway with current students. Talamantes et al. (2016) found that physician role models and mentors were key in informing students about elements of successful preparation and offering encouragement for their goals.

Implications for future research and practice

Several implications for future research and practice exist. We highlight a few recommendations here. First, because this is an exploratory study, there is room to extend inquiry into pre-health advisors in additional states. This study also implied a need to better understand community college advisees' perceptions of pre-medicine pathways – among students who have not yet transferred to a four-year institution if that is their goal and/or those who successfully transferred and wanted to pursue pre-medicine. Second, we see the need for a comprehensive quantitative analysis of how many medical school matriculants and graduates (M.D., M.D.-Ph.D.) completed coursework or an Associate's degree at a community college. These data exist in medical school and national application databases because transcript information is routinely collected and verified (e.g., AAMC). Though we predict the percentages are low compared to those who did not attend a community college, if more medical school admissions officers and leaders knew these statistics, perhaps the prevalence of community college coursework among the current cadre of physicians would be one small way to combat stigma and elitism around community colleges and admissions criteria. Class profiles published by individual medical schools could supplement this data highlighting community college pathways by including the names of community colleges, not just four-year colleges, included in the paths of matriculants. Medical schools often report the percentage of the class that attended post baccalaureate students or the percentage of students with advanced degrees, and including associates degrees and community college pedigrees would increase visibility and help validate community college pathways. While this study focused on MD contexts, Osteopathic Medicine (OD) pathways for community college students are also well-worth exploring for future studies.

Implications for future practice are numerous. This study elucidated the need for intentional partnerships between medical schools and community colleges – especially but not only in light of ongoing challenges for advisors' and students' navigation of transfer processes between two- and four-year institutions. Partnerships between medical schools and community colleges with clear, supported, explicit transfer and preparation pathways are a crucial element to diversifying medicine given the challenges with the Students for Fair Admissions, Inc. v. President and Fellows of Harvard College (2023) Supreme Court decision to ban the consideration of race and ethnicity. As described in the findings, aside from Ana's grant-funded programs, pre-health advisors often lacked resources and/or knowledge to support advisees' pathways to medical school. Community colleges, while providing access to higher education for millions of students each year, often have competing aims in their funding streams and goals as they serve vocational training, adult education, and university-bound students (Levin, 2001, 2007, 2017). In addition to limited resources, we argue that a power dynamic exists in terms of what entity has more information about pathways to medical school. Therefore, we recommend that partnerships are initiated by four-year institutions that have both a transfer policy and a medical school; wherein community college advisors and their students can view the transfer process in the context of transferring to a four-year

institution and applying to medical school rather than separate, disjointed processes that do not relate to one another. Information sharing does not necessarily have to coincide with a costly program to either the community college or the four-year institution. Medical schools can also initiate partnerships and pathway programs that connect community colleges with undergraduate partners and subsequent medical school entry points. Medical schools are in a strong position to provide clear guidance about requirements and preparatory elements that are critical for student success. Moreover, medical schools can provide resources in instruction, academic enhancement, curricular, and co-curricular enrichment given their dedicated infrastructure to basic science teaching and research and their current cohorts of students that can potentially serve as mentors and role models.

While there are support mechanisms for pre-health students prior to matriculation to medical school (e.g., post-baccalaureate research programs; federally or locally funded sponsored research opportunities), there are very few structured medical school preparation or transition support systems or programs to bridge success between community college and four-year institutions. We see ample opportunity for pre-health advising organizations focused on four-year institutions – such as the National Association of Advisors for the Health Professions (NAAHP) – to consider proactive, dedicated membership structures for community college pre-health advisors. We encourage the AAMC to heavily invest in resources for community college students to navigate pathways to MD programs. Advising and support structures must also be intentionally linked to medical schools to ensure the most accurate information about pre-medicine pathways and facilitating critical mentorship opportunities for students and/or advisors. As identified by Epler et al. (2023), mentoring partnerships between community colleges and four-year institutions can be impactful.

Other implications for future practice suggest that community colleges should enhance their advising structures to assist internal and external stakeholders in identifying aspiring physicians as early as possible. While we fully acknowledge the reality of limited resources, it is arguably a missed opportunity for community colleges to provide advising services as purely transactional, customer service-oriented interactions. Enacting more widespread requirements for students to declare an intended career path could be a starting point for students to reflect on their interests if they have not already done so, and for advisors to at least begin to identify a sub-group of advisees who are interested in pre-medicine as compared to pre-health in general. Even if community college advisors cannot provide career exploration, programming, or enrichment, they would at least be able to share opportunities with students who have indicated an interest in medicine as a career with organizations and partners seeking to reach community college students. Furthermore, given power dynamics and cultural capital, we call upon our colleagues who serve as leaders in research-intensive, four-year universities and/or U.S. medical schools to view students who attend community college with an asset-based lens. If medical schools across the U.S. and official governing organizations of the medical profession continue to seek socioeconomically and racially diverse applicants, they would be well-served to intentionally include current students and graduates of our nation's community colleges and work to establish clear, well-resourced pathways.

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Appendix A

- (1) Tell me about your current role as a pre-health advisor or counselor (PHAC) at “x” community college.
 - (a) What services do you provide to students?
 - (b) What is your advisee load?
 - (c) What career paths are most common among your advisees?
 - (d) Do you intend to continue your career in a community college setting?
 - (e) What motivated you to pursue this line of work?
- (2) Tell me about your experiences in relationship to advising your students for medical school.
 - (a) What resources are available to students through your office to support career goals in science, health science, and health careers?
 - (b) What classes do/would you recommend students take if they are preparing for a career in medicine?
 - (c) Are there resources that are needed that the college does not provide? If so, what?
- (3) What are the top 1-2 challenges or barriers you face in your role as a PHAC relative to serving your students?
- (4) What are the top 1-2 opportunities you see in your role as a PHAC relative to serving your students?
- (5) What, in your view, are the primary sources of support in your role as a PHAC in order to meet the goals for your position? For you personally?
 - (a) Do you have access to professional development and/or a professional network to increase your knowledge and practice?
- (6) What, if anything, do you wish you had more access to and/or resources for to support your role as a PHAC in order to meet the goals for your position?
- (7) What has your experience been like in assisting students toward pathways to U.S. allopathic medical school admission (MD or MD/PhD)?
 - (a) What percent of your students wish to pursue a pathway to medical school?
 - (b) What, if any, relationships or connections do you or your institution currently have with medical schools?
 - (c) What, if any, training do you receive regarding medical school application processes?
 - (d) About how many, if any, of your former advisees gained entrance to a U.S. allopathic medical school?
 - (e) What are your thoughts on the current diversity of medical school applicants in the US?
- (8) What, if anything, do you wish 4-year institutions knew regarding your experiences as a PHAC?
- (9) What, if anything, do you wish medical schools knew regarding your experiences as a PHAC?
- (10) Is there anything else you would like to share with us at this time?
 - (a) Opportunity to select/finalize pseudonym for research write-up purposes.