

Yes, you can get into medical school

Guide to being a first-generation, low-income pre-med student at Harvard College

Meiyi Yu '22, Chemistry

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Abstract

Pre-medical students follow a specific track in order to become competitive applicants to medical school. The general knowledge is that students should maintain a high grade point average, score well on the Medical College Admission Test, have clinical experience, obtain excellent letters of recommendation, etc. The pre-med track with rigorous coursework and heavy load of activities that need to be completed in a short period can be especially stressful for first-generation, low-income students who are navigating college on their own. This project studies the challenges that first-generation, low-income pre-med students at Harvard experience throughout their journey to medical school by conducting interviews with these students. The findings of this project will contribute to the understanding of student experiences at the intersection of being first-generation, low-income, and pre-med, which will allow potential development of interventions that can provide better support for this population. The findings of the research are also applied to develop this guide containing what first-generation, low-income pre-med students at Harvard should know, institutional resources that can support them, and tips compiled from pre-med advisors as well as students at the college.

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Members of the Harvard College community commit themselves to producing academic work of integrity – that is, work that adheres to the scholarly and intellectual standards of accurate attribution of sources, appropriate collection and use of data, and transparent acknowledgement of the contribution of others to their ideas, discoveries, interpretations, and conclusions. Cheating on exams or problem sets, plagiarizing or misrepresenting the ideas or language of someone else as one's own, falsifying data, or any other instance of academic dishonesty violates the standards of our community, as well as the standards of the wider world of learning and affairs.

I affirm my awareness of the standards of the Harvard College Honor Code.



Meiyi Yu

Introduction

College is challenging for many students due to reasons such as learning more advanced academic topics, different styles of learning, or transition to a new social environment. First-generation college students (FGCS), defined by Harvard College as those who are the first within their immediate family to graduate from a four-year college, encounter additional hardships because, unlike their peers, they do not have parents they can turn to for advice when experiencing challenges in college. They lack the cultural capital to be fully prepared for college, which negatively affects their academic performance (Collier & Morgan, 2008; Oldfield, 2007). Additionally, previous research reported that half of FGCS were from low-income families where the majority of their households make less than \$50,000 (Chen, 2005; Redford et al., 2017). While college on its own is already difficult to navigate, students who are on the pre-medical track experience additional stress from the need to fulfill requirements for applying to medical school. Besides performing well in all of their courses, pre-med students need to seek opportunities and plan accordingly in order to demonstrate their potential to become excellent medical students and physicians in their medical school applications. The U.S. News listed that clinical work, service, leadership experience, and research are some activities that can help applicants stand out because solely a high grade point average (GPA) combined with a superb Medical College Admission Test (MCAT) score is not enough. As expected, Smedley et al. (2001) identified that pre-health advising is essential in the success of students that are pursuing careers in this specific field. Since FGCS lack support from their families, it is especially important that they are receiving it from outside resources like their advising programs.

Over 15% of Harvard students identify as FGCS and 20% have family incomes less than \$65,000. All Harvard students have access to the Office of Career Services (OCS) Premedical and Health Careers Advising, and students are able to meet with their residential house premedical committee starting their sophomore year. The OCS provides a 21-page packet of information for pre-med students containing timelines, courses, and other resources that they could contact. Another 10-page guide has been developed by the Harvard Black Premedical Society sharing service, research, and shadowing opportunities. While Harvard pre-med students no doubt should have access to a wealth of resources, it is questionable whether these resources are accessible and sufficient in guiding first-generation, low-income (FGLI) pre-med students to success. Therefore, this empirical research project aims to assess the barriers of FGLI pre-med

students in order to construct a guide that can better support these students in obtaining the support that they need. The research will be driven by the questions what challenges do FGLI med students need to overcome in college? Are there institutional resources that address these challenges?

To answer these questions, interviews were conducted with a sample of FGLI pre-med students to gain insights into their experiences. It is hypothesized that these data will show how FGLI pre-med students lack knowledge in the implicit information for success such as how to form relationships with professors in order to obtain letters of recommendations or how to manage heavy workloads and perform well academically.

Literature Review

FGLI students are disadvantaged, compared to students whose parents earned bachelor's degrees, in terms of knowledge about higher education, family income and support, low education expectations, and academic preparation (Engle & Tinto, 2008; Pascarella et al., 2004; Terenzini et al., 1996). These disadvantages lead to poorer academic performances as on average, FGCS had a lower GPA of 2.6 compared to non-FGCS with a 2.8 average (Warburton et al., 2001), which would make FGCS less competitive applicants for medical school when looking only at academic statistics. Contributing to not being academically prepared for college, Collier and Morgan (2008) identified that FGCS, due to their parents' limited educational experiences, are less able to fulfill their student roles and the expectations of faculty. These roles and expectations require the implicit understanding of how to demonstrate their knowledge of the course content to their professors. As a result, FGCS are less likely to know what it would take to succeed in their courses. In addition to not being prepared academically, they are less likely to perceive faculty members as concerned for student or to engage with authority figures academically, tend to work more hours, and show lower levels of extracurricular involvement (Jack, 2016; Pascarella et al., 2004; Terenzini et al., 1996). This impacts post-graduation outcomes as Cataldi et al. (2018) reported that while only 4% of first-generation graduates enroll in doctoral or professional programs, 10% of students whose parents earned bachelor's degrees have enrolled. The challenges that FGLI students are known to encounter demonstrate a need to provide them with better support in order to help them succeed in college and gain admission to medical school. Despite the knowledge that FGLI students face additional barriers compared to

their peers, there is little research on the undergraduate pre-med experience especially for students who identify as FGLI (Lin et al., 2013). Therefore, this project explored the barriers that FGLI pre-med students may face and how these barriers could potentially be addressed.

Methods

To identify the common barriers that FGLI pre-med students may encounter, semi-structured interviews that each lasted for about 20 minutes were conducted over Zoom with nine undergraduate pre-med students who identify as FGLI. Participants were recruited through snowball sampling, starting with a junior FGLI pre-med student that I know. The final sample consisted of 1 first-year, 2 sophomores, and 6 juniors. Additionally, a Qualtrics survey was sent over the Harvard Primus email list, a community of 572 FGLI students at Harvard College. The responses from the survey were used to shape the interview questions. In the survey, respondents were able to express challenges they have encountered and the resources that they know of or have accessed as well as the support they think is missing. Two expert interviews were also conducted prior to student interviews in order to understand the challenges of FGLI pre-med students that advisers are aware of and the resources that are available to students, better structuring student interviews. The interview protocols were adapted from an undergraduate honors thesis that investigated pre-medical preparation of FGCS (Chang 2016). The interview-based approach was chosen as the preferred method of qualitative data collection because it would allow exploration of different challenges of FGLI pre-med students that may not have been identified yet and gain in-depth understandings of their experiences. Interviews also allow more fluidity in collecting information with interviewees that have different experiences. The data was analyzed qualitatively by coding the interview transcripts for major themes and presented as case studies.

Limitations and Positionality

The conclusions drawn from this data have limitations as the small, non-random sample may not be representative of the entire Harvard FGLI pre-med student population. The barriers that are identified through the interviews will not be exhaustive. I am aware that as a FGLI pre-med student myself, I have pre-existing biases and opinions on the challenges this student population may encounter. However, the interview questions were worded as objectively as

possible and will capture the views of the interviewees instead of my own. All of the data collected will be kept anonymous in order to protect the privacy of participants.

Results

Lack of academic preparation

As identified through the literature, most of the FGLI pre-med students interviewed expressed challenges dealing with the rigor of their course work. These students all attended public high schools that consisted of majorly underserved and minority populations. One student described his high school as “a drop-out school that is mostly for kids who have trouble, and the goal is to get them out of high school instead of into college.” Another student reflected on her experience of choosing to take what is perceived as the lower-level science and math classes during her first year and noticed that when she looked around the room, most students were people of color from low-income backgrounds. Going into college, many FGLI pre-med students already bring with them academic challenges that would need to be addressed with extra support.

Even though the junior FGLI pre-med students have the grit, obtained the experience, and developed the study skills to ultimately perform well in their classes, they still feel like there is a gap between them and their peers who have gone to high schools that better prepared them academically. “And I never really feel like I caught up even though technically I caught up because now I’m in the same classes as the kids who started off in LS1a, [an introductory course to chemistry and biology that is an alternative to a course that is offered for students who do not have a strong foundation in the subjects], but I’m always struggling” a student expressed. This existing gap leads to some of these students feeling overworked as one student explained that the academically well-prepared students are “able to spend 10 hours studying for an exam versus I still need to spend 30 hours or more for an exam just because there’s a level of insecurity and it just produces anxiety that just pushes you back, and maybe it’s not the same for other students who are not FGLI, who do not have to wonder if it’s actually possible to fulfill their goals, because they’ve seen it in their generation and their parents’.” These academic challenges have consequences beyond obtaining lower GPAs. Students pointed out that doing well in their courses was always their priority during the school year, causing them to focus less on other aspects such as planning their trajectories to medical school.

Feeling of incompetency

Another consequence of being less academically prepared is losing self-confidence. Feeling “underqualified” is a common trend among the majority of the students interviewed. “It’s like we have an inferiority complex going on. I feel like I’m underprepared and like I’m not as smart or qualified as other people” one student responded when explaining why she feels stressed all the time as a FGLI pre-med student. Comparing themselves to other pre-med students who are engaging in a variety of clubs, starting their own nonprofit organizations, or making significant contributions to their research labs, these students feel like the other premeds are more “competitive,” “hardcore,” and “have their lives together.”

The feeling of being incompetent is damaging as FGLI pre-med students would give up pursuing opportunities that they might be fully capable of. For example, a student mentioned self-selecting herself out of research opportunities because “there’s no way that they’ll pick me over my peers who’s just so much more qualified.” Another student expressed that “I’m always scared. I don’t trust the [Harvard course] placement exam. Whatever they told me like no no, I’m just gonna go lower than whatever you tell me,” revealing that even when these students are academically capable, their lack of self-confidence might cause them to refrain from seeking certain opportunities.

Not only does the lack of self-confidence takes away opportunities from these students, but it also creates additional pressure. A student noticed that whenever she asks professors questions she constantly starts with “hi, I’m sorry this is stupid, but ...” Complementing the idea of feeling less deserving, another student shared that “sometimes I feel like I have to prove to other people that I deserve my place here.” The feeling of being incompetent in FGLI pre-med students due to lack of academic preparedness for college is exacerbated by self-comparison to other non-FGLI pre-med students, creating barriers to taking advantage of opportunities at Harvard.

Lack of support through the advising system

Advising is a common way for college students to receive support during their time at their institutions. In general, meeting with advisors has been shown to increase student responsibility, self-efficacy, study skills, perceived support, and success (Young-Jones et al., 2012). Therefore, advising programs serve important roles in supporting students through the

pre-med track. Most of the students interviewed have met with advisers before but do not feel a strong connection with the advisers. A barrier to accessing this resource is the availability of the advisers. Students feel that advisers are often very booked and busy. A student felt deterred from reaching out to her house premed tutors because she did not receive a response after sending an email to the tutor. While students are often told that advising is an available resource, in reality, it is not always easily accessible. Students found making appointments with the OCS difficult because the timeslots do not fit into their schedules. Many also feel like the resource is more reserved for upperclassmen who are actively applying for medical school.

Even after students successfully scheduled meetings with premed advisers, they were unable to establish relationships that make them comfortable reaching out to the advisers again for support. One student described her disappointing experience with a premed advisor at her residential house. When asked how he studied for the MCAT, the tutor claimed that he was naturally good at physics and biology so it was not a worry. The student cried after the meeting because the tutor “doesn’t understand what it’s like to not be privileged, to be poor and struggling.” The tutor’s inability to recognize the challenges that the student was facing led him to be unable to give effective advice and even fueled her feeling of being incompetent.

Perception of professors as distant people

Previous research has shown that students who view their faculty members as being approachable, respectful, and available for frequent interactions outside the classroom are more likely to feel confident academically and motivated (Komarraju et al., 2010). It was also found in a study sampling from organic chemistry courses that positive relationships with professors associate with small but significant increase in final grade (Micari & Pazos, 2012). However, Jack (2015) argued that lower-income students tend to resist engagement with college authority figures. Consistent with Jack’s findings, most FGLI pre-med students find it difficult to connect with professors. One student stated that “there’s something intimidating about going to office hours by professors. I know a lot of other people do, and I think they tend to not be FGLI. I think none of my friends go to office hours with professors.” This intimidation could stem from not knowing how to approach the professors. Another student expressed that “I feel like I’m just very awkward and I don’t know much about conversing with professors.” Another source of this intimidation could be because FGLI pre-med students may not feel like professors are

approachable as a student said that she does not feel like professors care about her as a student and gets the impression that professors are “big fancy [people].” One claimed that her professor is “just very unapproachable not because of what they do but because of who they are already. It’s kind of hard. Just feels so far away.” This sense of distance could be related back to the previous identified barriers of lack of adequate academic preparation and feeling incompetent, because one student found that it is easier to hold conversation with professors of non-science, technology, engineering, and mathematics (STEM) courses. “I feel like sometimes students approach talking with professors in STEM talking about their research, but I feel like I wasn’t very familiar with that.” However, a student who experienced challenges connecting with certain professors got along with professors who are minorities or come from low-income backgrounds. Instead of connecting with professors, many students also got to know the preceptors and the teaching fellows better.

The consequence of not being able to develop relationships with professors is worrying about who to obtain letters of recommendations from. Many revealed that in the large pre-med requirement STEM classes, the professors do not remember or even know who they are. Additionally, a student described her discomfort in asking for letters of recommendation as “it makes me feel dirty. It makes me feel like... you know I’ve had a relationship with you as a professor. It was only because I wanted a letter of recommendation. I don’t care about you as a person. That’s what it makes me feel like I come off as.” Another student also shares this feeling of discomfort even though she was told by other people that writing letters of recommendations is part of the professors’ jobs.

Discussion

Improvement with advising

This study identified that the established advising program at Harvard is insufficient in providing for the needs of FGLI pre-med students, and this could be improved by increasing representation in the advisers as well as increasing the accessibility of advising. What is missing from the current advising system is advisers that are representative of the advisees. While FGLI pre-med students often do not feel very inclined to approach advisers who are from more privileged backgrounds, they connected with advisers who come from similar backgrounds because they are more relatable. These advisers serve as inspirations because one student thought

that if they have accomplished something starting from the same place that she did, then she could attain the same achievements too. It is possible that it is not the background of the advisers that these students are most focused on. A student stated that she does not feel comfortable around people unless she feels like they are invested or that they care about her as a person, suggesting that students might simply be looking for someone who can recognize the hardships they are going through, be empathetic, and offer practical advice.

The accessibility of advising is also integral to building a strong advising network. Virtual drop-in meetings with premed advisers that started during the coronavirus pandemic made it easier to access this resource than having to physically go into the OCS office.

Structured mentorship

As FGLI students experience difficulty building relationships with professors, mentorship programs that systematically create opportunities for these students to engage with professors will help them develop the comfort to reach out to other professors they meet. A student expressed that she was initially intimidated to talk to professors, but her experience of being matched with a professor as her first-year academic adviser, working closely with a professor in a laboratory setting, and taking a smaller-sized course allowed her to gain more confidence to talk to more professors throughout her time at Harvard because she felt that she had people who can advocate for her. Intentionally creating opportunities for FGLI students to interact with professors could be helpful for them to develop the idea that professors are approachable.

More academic support

Knowing that many FGLI pre-med students struggle academically, it is important to enhance academic support resources. The common resources that students utilize to receive academic help are the Academic Resource Center, or what was formerly known as the Bureau Study Counsel, office hours, and peers. A student complained that only having 2 hours of peer tutoring through the Academic Resource Center was not enough for her. She had to convince the office to give her 3 to 4 hours instead, making her feel annoying. Most FGLI pre-med students interviewed feel that classes themselves do not offer enough support for students to succeed. “They kind of just expect you to get it and move on” a student explained. Another claimed that a general chemistry course gives a lot of support while the introductory course to life sciences

offers a lot less, causing her to “ever so often be like ‘am I cut from being pre-med?’ That class is not going that great.” Increasing the number of staff and the number of hours students can receive tutoring will be essential to providing more adequate academic support. As identified earlier, FGLI pre-med students feel like they usually need to study longer to perform well in their course; thus, ensuring that they are receiving the extra support when needed will be significant to eventually narrowing the gap between them and students who are more academically prepared by their high schools.

More outreach to FGLI pre-med students

Resource programs should outreach more to FGLI pre-med students to make themselves known. FGCS differ from non-FGCS in their needs as they may benefit more from familiarizing themselves with academic requirements and available resources (Young-Jones et al., 2012). Oftentimes, students do not know how to access certain resources or know that certain opportunities exist. This problem could potentially be addressed by sending representatives from the programs to talk to students. For example, these representatives can attend study breaks of first-year dorms and make themselves known to students rather than solely expecting students to go to them. This would also alleviate students’ intimidation of reaching out.

FGLI pre-med students also wish that more time and support could be dedicated to supporting them. As FGLI students have different perceptions of how things like networking work in the higher education setting, more is needed than 15-minute meetings. An orientation similar to the First-Year Retreat and Experience Program but targeted towards FGLI pre-med students would be helpful to introducing these students to ideas on how they could navigate their undergraduate experiences.

Conclusion

The main barriers that this interview-based study identified are the academic and social challenges of FGLI pre-med students. Academically, these students are not as well-prepared compared to non-FGLI students since many of them attended under-resourced high schools. Socially, these students feel inadequate compared to other students. They also lack staff and faculty support groups due to difficulty accessing advisors and feelings of intimidation connecting with professors. Despite these challenges, FGLI pre-med students are able to find

comfort in bonding with other students from similar backgrounds because they can relate to one another and vent to one another about their struggles. Notably, a student who attended a private high school felt prepared for his college courses even though they are challenging, found developing relationships with professors to be easy in small classes, and anticipated that obtaining letters of recommendations to be very easy because he found that professors are very understanding. This suggests that resources provided by the college, if sufficient, could make a significant difference in bettering the experiences of FGLI pre-med students who attended under-resourced schools.

With identifying the barriers that FGLI pre-med students encounter, it is also essential to elucidate whether pre-med advisors are aware of these barriers in order to assess how advisors can provide better support for these students. Preliminary data collected from interviews with four advisers showed that they are generally more focused on the financial challenges that students face and less on their emotional experiences. More research will need to be conducted to investigate whether there is a gap between the perception of pre-med advisors and the actual barriers that FGLI pre-med students need to overcome.

TIPS TO BEING A FGLI PRE-MED AT HARVARD

Being on the pre-med track is difficult. It is common to find that FGLI pre-med students from under-resourced high schools encounter even more hardships compared to other pre-med students. This is an unofficial guide to being pre-med at Harvard for FGLI students. The guide is a combination of general tips and some specific instructions on how to access opportunities.

Other useful guides:

OCS has developed a guide for pre-med students to plan their courses and has included example schedules. You can access the most updated version on their website: ocs.fas.harvard.edu/premed-academic-requirements

The Black Premedical Society created a guide containing information on volunteering, research, and shadowing opportunities that students can engage in:

<https://docs.google.com/document/d/1ToEtI-pwzNosZAp3PPkVHUvE3E1wsBt0WRraHUG8ls4/edit>

GENERAL ADVICE

1 YOU DESERVE TO BE HERE!

Many FGLI pre-med students often feel like they are not as smart or as accomplished as other students, but you are here for a reason. You will improve academically as you take more courses.

2 REACH OUT TO ADVISORS

It is important to plan ahead as a pre-med. If your assigned advisor didn't respond to your email. Send them a follow-up because they are here to help you! You can also schedule appointments with the pre-med advisors at the OCS through their website: ocs.fas.harvard.edu/premedical-health-careers-advising

3 PROFESSORS ARE APPROACHABLE

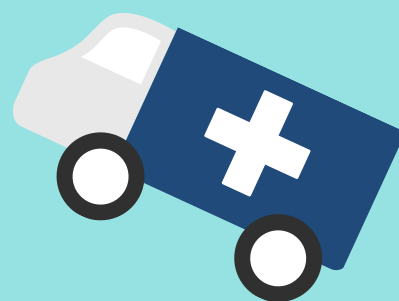
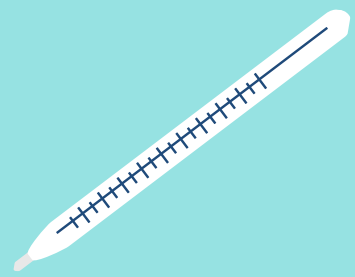
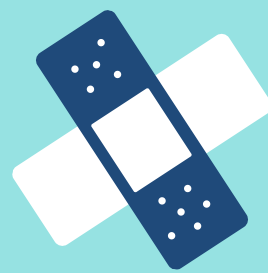
It can be intimidating to talk to professors. If you are able to go to office hours, you can listen to what other students are asking and join their conversation. The first step is to actually go to office hours! Students who make the first step become more comfortable connecting with professors throughout their time here at Harvard.

4 FIND YOUR SUPPORT GROUP

FGLI pre-med students tend to find one another. Find yourself people you can relate and vent to. If possible, build a support group of faculty too! Students benefit from feeling like there are people who are there to advocate for them.

5 ACCESS RESOURCES

Take advantage of all of the resources at Harvard. Don't feel bad! If you have a problem, chances are there is someone here with a position designed to offer you assistance. Ask your friends or advisors or search on the web to see if there are any resources available!



ACADEMIC RESOURCES

Courses at Harvard are difficult, but you can do well! Take advantage of these resources!

ACADEMIC RESOURCE CENTER

The ARC provides peer tutoring and academic coaching. Schedule an appointment on their website: academicresourcecenter.harvard.edu

If two 60-minute sessions are not enough, contact the office (academicresourcecenter@harvard.edu) to see if you can schedule extra appointments!



OFFICE HOURS

If professors' office hours are intimidating, you can go to office hours of preceptors or teaching fellows. Have a schedule conflict? Contact them to schedule another time!

MATH QUESTION CENTER

Frequently staffed by math course assistants, MQC is one of the best places to get your questions answered. You can also go in and find groups of students working on the pset together! Check out the specific hours here: www.math.harvard.edu/undergraduate/math-question-center/



FIND PSET BUDDIES

It helps to work with other students and talk through certain concepts. Two or more brains are better than one after all! Besides, it will be more enjoyable working with friends.

Conversing With Professors

PSet

It is okay to go to office hours to ask about the problem set or clarification on the course material! You don't need to go in with a noble prize level question.

Research

Search up a paper published by the professor that seems interesting to you. It is okay if you don't understand everything in the paper. Go to office hours and ask what you are confused about!

Get to know them on a personal level

Professors are humans too. Don't be afraid to have fun conversations with them. Here are some conversation starters:

- Why do you enjoy teaching undergraduate students?
- What is your favorite topic/class to teach and why?
- What is your favorite part about being a professor?
- What is your least favorite part about being a professor?
- How did you first get involved with your field?
- What advice would you give to students who are interested in your field?

Go to office hours with a friend

If you feel awkward trying to hold a conversation with a professor, ask a friend who is also enrolled in the course to go with you! Chances are you will feel more comfortable with the presence of a friend and one of you can step in when the other runs out of things to say. However, if you can't find someone to go with you, chances are there will be other students there. Listen to what they are talking about and join them!

Appendix

Student interview questions

1. How is your experience being pre-med at Harvard?
 - a) Anything surprising, unexpected, challenging?
2. How academically prepared do you feel as a pre-med?
 - a) Did you experience any academic challenges?
 - b) Did you access any academic resources?
 - i) If you did not access any resources, why not?
3. How easy or difficult is it for you to access opportunities at Harvard?
 - a) Specifically, how easy or difficult is it to access research opportunities?
4. How socially prepared do you feel as a pre-med?
 - a) How is your interaction with other pre-med students?
 - b) How easy or difficult is it for you to develop relationships with professors?
 - i) How easy or difficult do you anticipate obtaining letters of recommendations from professors?
5. Do you know who you can go to for pre-med support?
 - a) Do you have a person you feel comfortable going to for pre-med support?
 - i) What is your relationship with premed advisors like?
 - ii) Do you usually share with your adviser your identity as FGLI?
 - (1) How did that affect the effectiveness of advising?
6. What is something that you think all FGLI pre-med students should know?
7. What suggestions do you have for Harvard to better support FGLI pre-med students?
8. Is there anything that I should ask but didn't?

Student survey questions

1. On a scale of 1 through 5 (1 being the worst and 5 being the best), how is your experience being pre-med at Harvard?
2. Select whether you strongly disagree, disagree, neutral, agree, or strongly disagree with the following statements.
 - a. I know who I can go to for pre-med support.
 - b. I know a person I feel comfortable going to for pre-med support.

- c. I feel academically prepared as a pre-med.
 - d. It is easy for me to access opportunities at Harvard.
 - e. It is easy for me to access research opportunities at Harvard.
 - f. I feel socially prepared as a pre-med.
 - g. It is easy for me to develop relationships with professors.
 - h. I anticipate that it will be easy for me to obtain letter of recommendations from my professors for medical school application.
3. What are the main challenges (academically, socially, etc) that you encountered as a FGLI premed student at Harvard?
 4. Please select the following academic resources you have accessed if any.
 - a. Academic Resource Center
 - b. Office hours with the teaching fellow
 - c. Office hours with the professor
 - d. Other
 5. What questions do you have about being a pre-med?
 6. What is something that all first-generation, low-income pre-med students should know?
 7. What suggestions do you have for Harvard to better support FGLI premed students?
 8. Demographic survey
 - a. Class year
 - b. Race/ethnicity
 - c. Gender

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