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ORIGINAL RESEARCH

Making an Impact with E.M.P.A.C.T. Engage, Mentor Prepare, Advocate, Cultivate, and Teach: An Innovative Pilot Mentoring Program Evaluation for Students Underrepresented in Medicine

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Purpose: Medicine has yet to increase the representation of historically excluded persons in medicine to reflect the general population. The lack of support and guidance in the medical training of these individuals is a significant contributor to this disparity. The Engage, Mentor, Prepare, Advocate for, Cultivate, and Teach (EMPACT) Mentoring program was created to address this problem by providing support for learners who are historically underrepresented in medicine (URiM) as they progress through medical school.

Methods: The EMPACT Pilot Program was formed and conducted during the 2019–2020 academic year. A total of 19 EMPACT mentorship groups were created, each consisting of two mentors and four medical student mentees. Additionally, four professional development workshops were held along with a final Wrap-up and Awards event. Pre and post pilot program surveys along with surveys after each workshop and focus groups were conducted with a random selection of program participants.

Results: When compared to data from before and after the implementation of the EMPACT program, there were statistically significant differences ($p < 0.05$) in EMPACT mentees reporting they agree or strongly agree they felt ready to handle their clinical rotations (28% to 65%), felt the need to have an advocate (85% to 47%), possessed insight on day-to-day activities of an attending (26% to 56%) and felt a sense of community (79% to 94%). Mentors revealed an increase in their awareness of the concepts of microaggressions and imposter phenomenon. Finally, both groups felt an increase in their support system and sense of community at the school of medicine.

Conclusion: Despite COVID-19 limitations, the EMPACT program met its goals. We effectively supported URiM medical students through mentorship, networking, and community.

Keywords: mentoring, equity, workforce, URiM, medical education

Plain Language Summary

A structured mentoring program can address the unique needs of historically underrepresented in medicine (URiM) learners in undergraduate medical education. Increasing the number of physicians from historically excluded communities requires a careful consideration of the factors that contribute to this problem. *EMPACT* provides a model of how to create and implement a successful mentorship program that addresses contributors to low retention and increased attrition of URiM students. Mentoring programs such as *EMPACT* can promote effective mentor training, physician–student relationships, and success in medical school and their medical careers for mentors and mentees.

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Introduction

Diversity in the physician workforce should mirror our nation's diversity.[1] Racial and ethnic minorities, specifically Blacks or African Americans, American Indian or Indigenous peoples, and Hispanic and/or Latinx/o/a total over 30% of the US population; however, they represent around 12% of the physician workforce.[2–4] Given that health disparities and inequitable access to health-care services are pervasive in resource poor ethnic minority communities,[5] a diverse physician workforce is a necessary step toward eradicating these inequities by increasing cultural humility and cost-effective care for all.[5,6] For example, black patients with black doctors were 72% more likely to get a cholesterol test and 47% more likely to get diabetes screening compared to a black patient seeing a white doctor.[7] A diverse physician workforce increases trust between patients and doctors, while mitigating biases in the clinical setting, leading to better outcomes.[8] Of note, students of marginalized communities are subsequently more likely to return to work in medically underserved marginalized communities after training.[9]

However, once some students who are historically underrepresented in medicine (URiMs) enter undergraduate medical education (UME) as a part of increasing diversity, other obstacles exist: lack of mentorship and support, awareness of URiM unique needs, engagement with faculty members of color, in addition to experiencing biases, microaggressions and/or even racism in educational settings. URiMs face distinctive barriers at all stages of their education and professional development leading to disproportionate feelings of isolation, self-doubt, and fear in comparison to their counterparts thus affecting their performance and academic success.[10]

Yet, most of the barriers begin before they begin their professional journey. Often URiM students grow up in settings with fewer opportunities for career development and limited social mobility. In some cases, food and housing instability, as well as physical safety, play a role in their upbringing.[10] Dealing with trauma, lack of exposure to different positive experiences, and stress of new environments with uncertainty due to fear and racism can be detrimental to future and current medical students.[10] After medical students have matriculated, an additional host of barriers exist including: adapting to the culture of medicine, resource disparities, stigmatization of seeking help, and lack of institutional accountability.[10]

It is essential to acknowledge that URiM students come from a diverse range of cultures with unique values, norms, and traditions that play a role in their professional development. For example, research shows that Hispanic and/or Latinx/o/a, American Indian or Indigenous American, and Black or African American cultures often value communal goals more than individualist goals. Disregard for some of these unique cultural values, combined with resource disparities, and stigmatization of seeking help, can lead to more URiMs to struggle.[11] Additionally, institutions do not always offer culture-specific help due to lack of resources, awareness of need, URiM faculty and/or dedicated faculty or staff to address these needs.[12–15]

In order to mitigate the unique challenges of URiM students, innovative evidence-based solutions are needed. Mentorship programs posit a possible solution to ensuring the success of URiM students in medical school. As such, in the fall of 2019, we piloted a structured mentorship program, *EMPACT*. The mission of *EMPACT* is to Engage, Mentor, Prepare, Advocate for, Cultivate, and Teach URiM medical students in a supportive and inclusive learning environment. *EMPACT* provides students who self-identify as underrepresented in medicine and/or come from disadvantaged backgrounds with experiences that foster timely and successful progress through medical school and graduation.

EMPACT builds upon previous research and seeks to increase URiM faculty mentorship and peer-to-peer support, thus creating a pathway that can help URiM medical students succeed.[10,16] The program goals for EMPACT are to address their unique needs, strengthen social support with structured mentoring relationships, cultivate a sense of community, help mitigate barriers adapting to the culture of medicine, and promote personal and professional growth for URiMs.

EMPACT was designed to address the needs of URiM students and trainees. The short-term goal for this mentoring program is to support underrepresented minorities in medicine in ways that are sensitive to their unique backgrounds, challenges, values, and goals. The long-term goal is to not only increase diversity within medical schools and the physician workforce but also to maximize equity, inclusion and ultimately belonging whereby maximizing success of URiMs. Although there is an abundance of evidence on becoming a mentor,[17,18] there is still a lack of research demonstrating how to develop a robust mentoring program. The *EMPACT* program helps fill in these gaps by showing

the impact of direct guided mentorship on mentees, while providing consistent educational resources for both sides of the relationship.[19]

Methods

Basic Framework of the Program

A needs assessment was conducted and completed by URiM medical student learners in 2017 at the school of medicine. See Appendix 1. We created 19 groups of 3–4 medical school students (M1-M4) with two overarching faculty (attending and resident/fellow physicians). See Table 1. Students filled out a survey at the end of the initial introductory *EMPACT* mentoring event ranking the top three mentors they desired to be paired with in a mentoring group along with selection of their choice of peer mentors as well. Students had three options: to be randomly paired with a mentor and peer mentee group, be paired based upon their specialty of interest and/or simply be paired based on their organic interaction with the potential mentors and peers that evening of the introductory *EMPACT* mentoring event. In most cases, per students, it was a combination of organic interactions and interest in the specialty of the mentor.

The goals for these groups were to promote peer mentoring, leadership, accountability, and networking among its members. A trickle-down effect of mentoring was expected, as the more senior medical student mentee (M3 or M4) would also mentor the junior medical students (M1 or M2) enabling participants to learn about the culture of medicine and strategies to handle potential pitfalls more common to their own demographic and medical school cohort.

The *EMPACT* Program Director led the mentorship program, facilitated the mentorship pairings, recruited faculty and resident/fellow participants, conducted check-ins regularly with the program participants to ensure it is accomplishing its goals, and ultimately organized programing where all URiM faculty and students could interact and cultivate

Table 1 Demographics of Medical Students and Mentors in the Program

		Medical Students N = 69 (%)	Mentors N = 38 (%)
School Year			
	M1	32 (46.4)	
	M2	21 (30.4)	
	M3	5 (7.2)	
	M4	9 (13.0)	
	MD/MPH	1 (1.4)	
	Recent Graduate	1 (1.4)	
Clinical Role			
	Attending		30 (78.9)
	Fellow		3 (7.9)
	Resident		5 (13.2)
Gender			
	Female	34 (49.3)	25 (65.8)
	Male	35 (50.7)	13 (34.2)
Ethnicity			
	Non-Hispanic	65 (94.2)	35 (92.1)
	Hispanic	4 (5.8)	3 (7.9)
Race			
	Black or African American	61 (88.4)	33 (86.8)
	White	2 (2.9)	1 (2.6)
	Multi-Racial	5 (7.2)	3 (7.9)
	Choose Not to Answer	0 (0)	0 (0)
	Afro-Caribbean	1 (1.4)	1 (2.6)

relationships. Additional administrative support was required to help with flyers, reserving rooms, inputting events on the school calendars and ordering food.

Events and Programming

The *EMPACT* Pilot Program was conducted between October 2019 and May 2020. A total of 19 *EMPACT* mentorship groups were created from the October Mentoring Mixer. The Mentoring Mixer event enabled students to meet and engage with URiM faculty via dinner, speed mentoring activity and networking opportunities with guided questions. Furthermore, four workshops were held for *EMPACT* student mentees and mentors between March 2020 and May 2020: Addressing Microaggressions and Upstander Training, Maintaining Wellness during COVID-19, Overcoming the Imposter Phenomenon, and a CV Building Workshop. A final *EMPACT* Wrap-up event was held in May 2020 in which outstanding mentors and mentees were recognized. See Table 2 for themes with illustrative quotes from *EMPACT* participants on impact of programming and lessons learned.

Data Collection

Pre and post surveys were administered at the start of the *EMPACT* Program (October 2019) and at the end of the year (May 2020) See Appendix 2. The EMPACT Program Survey consisted of 30 questions along with additional demographics. Out of 69 students, 40 students completed the pre-survey (58.0%) and 34 students completed the post-survey (49.3%). Out of 38 mentors, 15 mentors completed the pre-survey (39.5%) and 16 mentors completed the post-survey (42.1%).

After each of the four *EMPACT* workshops, post-surveys were administered to workshop participants. Additionally, students and mentors were randomly selected for a phone call to ask about their experiences with the *EMPACT* program and gauge participation. Statistical significance was measured using 2×2 chi square analysis for the survey results. Qualitative data from phone interviews were reviewed for thematic analysis.

Table 2 Themes with Illustrative Quotations

Themes	Illustrative Quotations
Microaggressions and Bystander Workshop	"They have been the target of microaggressions". "The content of the lecture was valuable".
Wellness During COVID-19 Workshop	"They can identify signs and symptoms of stress". "They are aware of strategies to support themselves during stressful times". "Didn't know we had so many resources including financial resources, pertinent topic and feel more supported". "Nicely done, much needed talk, appreciate how Dr. Henry was able to let us know everyone feels stressed or down at some point and how to channel that stress into positive energy, good to know that Emory has resources and people in place to help if needed".
Imposter Phenomenon	"Strongly agree that they can define imposter syndrome". "Agree or strongly agree that they can identify strategies to combat imposter syndrome". "Appreciate Dr Henry for helping us through some of our shortcomings and providing a space to discuss and manage our feelings of self-doubt". "Interactive but informative, I'm happy to know there is a name for what I have felt and good to know ways that I can address it".
CV Workshop	"They know the importance of a CV for my academic and medical career". "They know the difference between a CV and resume". "Very helpful to understand how to highlight/sell yourself on your CV and knowing the aspects that are important to include". "So helpful! I never really knew what a CV was vs a resume, well done! Will start to regularly update my CV".

Results

EMPACT Mentorship Group Meetings

There was a total of 69 medical students and 38 mentors in the inaugural *EMPACT* mentoring program. Of the mentors and students who were randomly selected for a phone call to inquire about their level of engagement and satisfaction with their *EMPACT* mentoring group, 15 mentors and 34 students completed the phone interview. Students and mentors both reported an average of meeting three times after being matched in mentoring groups after the introductory mentoring mixer. Among those who met with their mentoring group, the most common mode of communication was email (37%), followed by in-person (25%) and video-based virtual platform (eg, Zoom) (25%). They were also asked the reason, content or topic(s) of their *EMPACT* mentoring group meeting(s). Among those who met with their mentoring group, the most common topics were introductions (29%), career advice (21%), general content (18%), and academic advice (14%). See Figure 1.

Impact of Educational Workshops

Surveys were administered to workshop attendees upon completion of each workshop. The median attendance for these workshops was 30 (SD = 3.65) and the median survey responses was 17.5 (SD = 2.38).

Pre and Post EMPACT Mentoring Program Survey Results

The vast majority of *EMPACT* students and mentors 95% and 82%, respectively, were aware of the term microaggressions prior to the *EMPACT* program. There was a clear increase trend (but not statistically significant) in mentors' awareness of the term microaggressions (82 to 100%) and how to address microaggressions (45 to 69%), as well as students' knowledge of how to address microaggressions (54% to 65%) when reviewing responses from before and after the *EMPACT* program.

Most *EMPACT* students were aware of the term imposter phenomenon (98%) prior to the *EMPACT* program and there was no significant difference in feelings of having imposter phenomenon (60–50%) before and after the program for medical students. For mentors, there was a *statistically significant increase* in awareness of the term imposter phenomenon (70% to 100%, $p < 0.05$) after the program and a *statistically* significant increase in mentors reported feeling they have imposter phenomenon (10% to 56%, $p < 0.05$) when compared to responses prior to starting the *EMPACT* program.

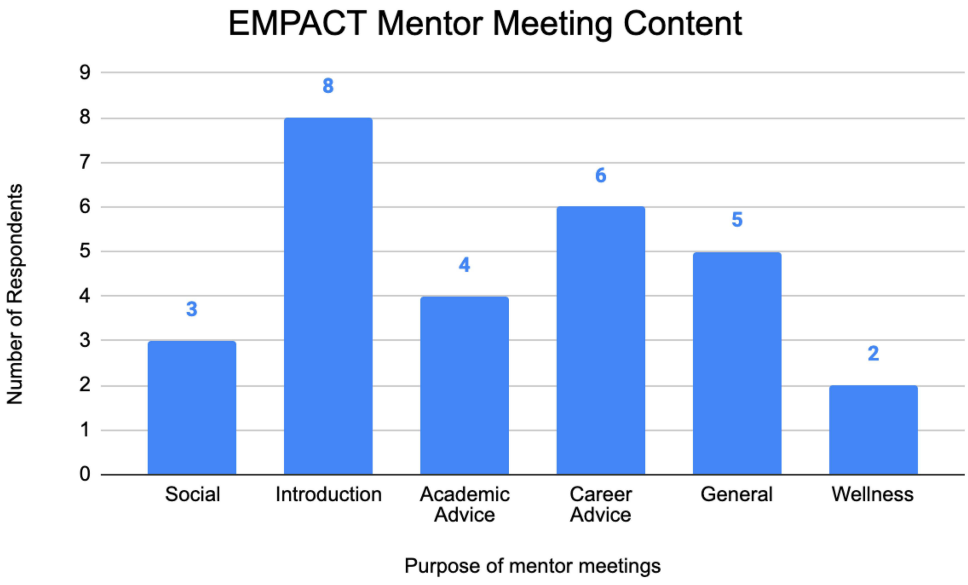

Figure 1 Purpose of EMPACT Mentor Meetings.

There was a *statistically significant increase* in the number of medical students that feel ready to handle their clinical education and/or clinical rotations (28% to 65%, $p < 0.05$), as well as having an insight into the day-to-day activities of attending (26% to 56%, $p < 0.05$) when comparing before and after the *EMPACT* Program. See Table 3.

There was a *statistically significant increase* for mentors and students in feeling that there is a good social support system and in feeling that they have a good sense of community at Emory SOM (79% to 94%, $p < 0.05$) when comparing before and after the *EMPACT* program. There was also a significant decrease in feeling the need to have an advocate at Emory (85% to 47%, $p < 0.05$). See Table 3.

In addition, although not statistically significant, there was a noticeable trend with an increase in the amount of student awareness of resources available if experiencing academic or personal difficulty and in feelings of confidence in having the resources needed to excel at Emory SOM for both students and mentors when comparing the responses before and after the *EMPACT* program.

Finally, *EMPACT* mentors and mentees were randomly selected for a phone interview to inquire about their experience in the EMPACT program and to gauge participation. Thirty-four (49.3%) *EMPACT* student mentees and 15 (39.5%) EMPACT mentors completed the phone interview. Of those students who completed the phone interview, 94% of students would recommend the *EMPACT* program to other students. The majority of mentors and mentees were

Table 3 Participant Attitudes Toward Their Experience at Emory Pre and Post Involvement in the EMPACT Pilot Mentoring Program

	Agree*	Not Agree**	Total	% Agree*
Students: I feel ready to handle my clinical education and/or clinical rotations, (if med student/resident/fellow) or (workplace if faculty)				
Pre-Survey	11	28	**39**	**28%**
Post-Survey	22	12	**34**	**65%[a]**
Students: I feel I need an advocate here at Emory SOM				
Pre-Survey	33	6	**39**	**85%**
Post-Survey	16	18	**34**	**47%[a]**
Students: I have insight on the day to day activities of an attending				
Pre-Survey	10	28	**38**	**26%**
Post-Survey	19	15	**34**	**56%[a]**
Students: I feel I have a sense of community at Emory SOM				
Pre-Survey	31	8	**39**	**79%**
Post-Survey	32	2	**34**	**94%[a]**
Mentors: I am aware of the term imposter syndrome				
Pre-Survey	7	3	**10**	**70%**
Post-Survey	16	0	**16**	**100%[a]**
Mentors: I feel like I have the imposter syndrome				
Pre-Survey	1	9	**10**	**10%**
Post-Survey	9	7	**16**	**56%[a]**

Notes: *Agree includes Strongly Agree and Agree survey responses. **Not Agree includes Neutral, Disagree, and Strongly Disagree survey responses. [a]Indicates significant at $p < 0.05$.

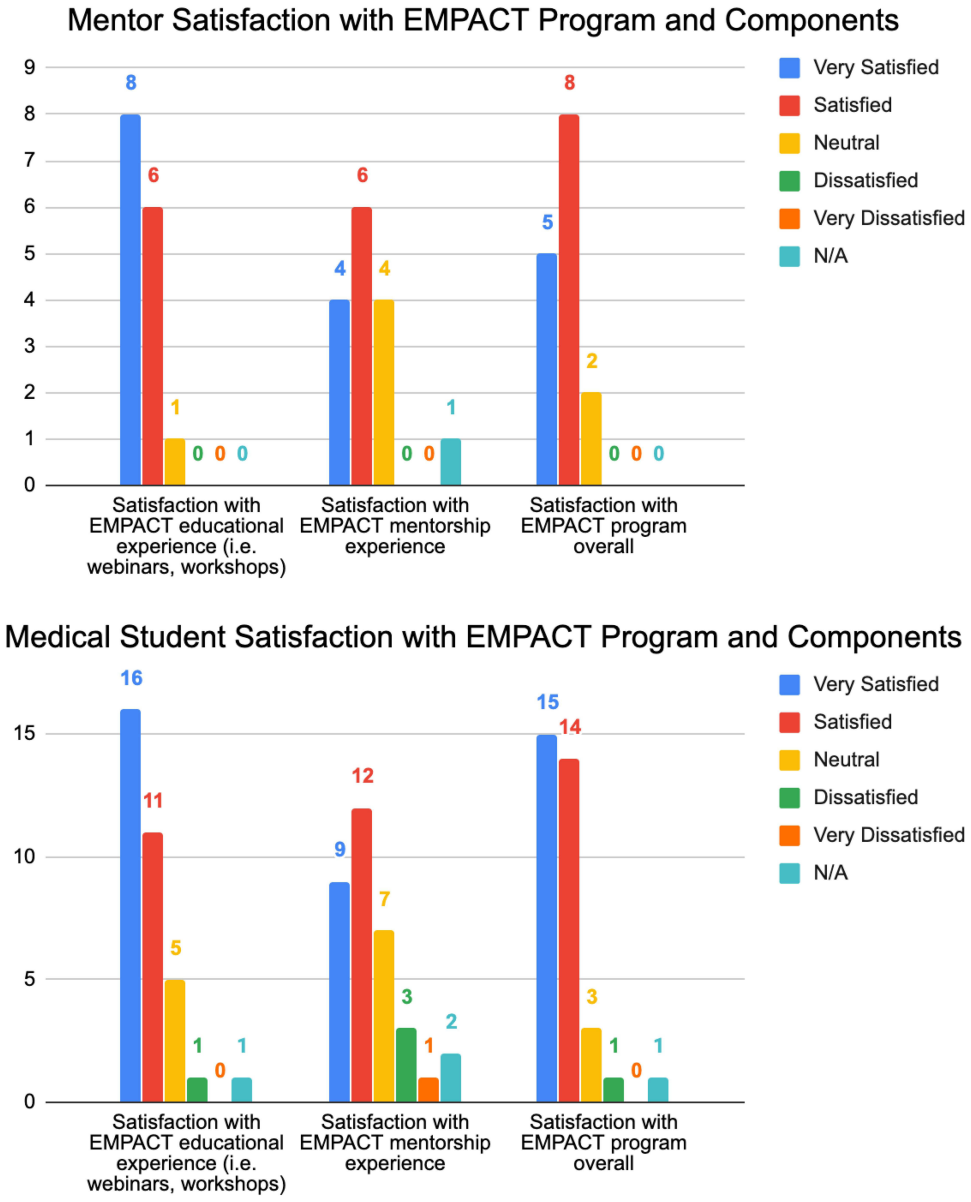

Figure 2 EMPACT Mentee and Mentor Satisfaction.

satisfied or very satisfied with the *EMPACT* educational experience (93% and 79%, respectively) and the program overall (87% and 85%, respectively). See Figure 2.

Discussion

Overall, the *EMPACT* program was successful in its goals to support URiM medical students. Success was defined as an increase in perceived professional and social development, support from community, and wellness for URiM mentees. Our data demonstrated that 94% of mentees would recommend the *EMPACT* program to other mentees with 93% of mentors recommending the program to future mentors.

This pilot mentoring program demonstrates not only the viability of evidence-based structured mentoring programs but also the positive impact on mentees. Furthermore, it shines a light on the necessity to engage URiM students in structured mentoring programs that build and maintain sustainable mentorship engagement. As seen in our intervention, such programs have the potential to greatly impact readiness for clinical clerkships, insight on specialties, and sense of community. Notably, structured mentorship programs give mentees readily accessible and experienced advocates. Prior

research has shown that racial/ethnic concordance between the mentor and mentee inspires students and provides positive influences towards their possibilities and alleviates concerns about explaining the context and nuances associated with their demographic.[20] Having a designated mentor equips students to handle the unforeseen circumstances they might experience as URiMs, while providing a space for professional relationships to flourish. Moreover, dedicated mentors provided and assisted students with opportunities such as other networking events (eg, specialty-specific), scholarships, research, shadowing, and leadership positions.

Unique to our program is the joint faculty and near peer mentoring which allowed the trickle-down effect of mentoring and for learners to have a glimpse of the future through more senior students, residents/fellows, or faculty. As opposed to physician-student mentorship, there is less impedance from a hierarchical framework in peer-to-peer mentorship between academic years and thus has the added benefit of fostering collaboration, trust, and empowerment at a faster rate.[21] There was a concerted effort to dedicate time and resources for intentional networking and targeted career development throughout the academic year along with clear expectations and responsibilities outlined for mentors and mentees.

Our data also revealed some surprising differences between mentors and mentees concerning knowledge of certain realities experienced in medicine. For example, mentees were *more* aware and knowledgeable of microaggressions than mentors and some of our mentors initially did not understand the concept of impostor phenomenon. Before the start of the program, 10% of mentors reported they felt they had the impostor phenomenon, while 60% of mentees reported they felt they had the impostor phenomenon. At the end of the program, 56% of mentors felt like they had imposter syndrome while only 50% of mentees felt like they possessed it. The decreasing trend in how mentees felt could have been attributed to the increased confidence in their self-efficacy and additional support from faculty and peers, which would further support the success of the EMPACT program. Particularly, more mentors may have felt they had the imposter phenomenon at the end of the program because over 60% of mentors were junior faculty, residents, or fellows who likely experience similar issues as our UriMs mentees (ie, microaggressions and work-life integration) and could possibly now map their experience onto a studied sensation. These results illustrate the importance of mentor training and faculty development before serving as a mentor as the concept of imposter phenomenon is not exclusive to newer generations, yet it is discussed more in current medical education.

Mentors must understand the changing environment of medical education to create opportunities for personal and professional growth, particularly necessary for the unique needs of URiM students. Thus, we incorporated educational activities and workshops into our mentorship program with resources on how to succeed in medicine to promote discussion and knowledge sharing. Workshops (eg, note writing and mock patient interviews) provide medical students direct supervision in preparation for clinical rotations and provide further insight into the information pertinent to each medical specialty prior to their patient presentations.[22] In this regard, our *EMPACT* mentees build rapport with their mentor and gain an enhancement in their confidence both personally and professionally.

Limitations

There were several limitations that could have affected the impact of the program. One major limitation was the COVID-19 pandemic because it prevented the program from being executed as intended. This may have affected the number of meetings mentoring groups held and decreased the feelings of connectedness and satisfaction with the program. Aside from COVID-19, there were some challenges with the surveys that could have affected the data. The pre and post surveys may have been completed by different respondents since the data was collected anonymously. In addition, the survey did not ask respondents whether they attended the workshops, which may have provided more insight into tracking pre and post outcomes for those who attended the workshops. The *EMPACT* pre and post survey also did not evaluate the one-on-one mentoring URiM students likely underwent, which included study strategies, assistance with scholarships and manuscripts, or facilitated connections to other mentors and programs. Lastly, schedules of medical students by academic year (M1-M4) are not aligned, making it difficult to find mutual times where all four classes could meet and provide additional barriers to participation and further peer-to-peer support.

Future Directions

We plan to incorporate a more diverse URiM population by actively reaching out to members of other URiM groups to encourage participation. Some students from other AAMC-defined URiM groups expressed assumptions that the program was only for one demographic. Also prudent is to track data for *EMPACT* mentee participants' academic performance, professional satisfaction, and feelings of inclusivity and belonging over time. As it relates to educational performance (pass, fail, time to graduate, match rates) of the URiM students in the mentoring program and compare to profiles of prior URiMs before the mentoring program was implemented. We will seek additional support for regular check-ins to ensure mentoring groups are meeting regularly, determine the effectiveness of their meetings and to address any challenges that arise. Also, we aim to determine the feasibility and accessibility of a website or in-person location to contain our academic resources.

Even though all *EMPACT* participants were highly encouraged to attend all *EMPACT* events (workshops, panels, mixer, etc.), some did not due to competing demands. Nonetheless, given many, including junior faculty, often experience issues with microaggressions, imposter phenomenon, and work life integration, our data suggest that educational career building sessions in our program would have benefitted them.

Conclusion

EMPACT was designed to address the unique needs of URiM students in a systematic structured fashion. Programs like this best work when a needs assessment is conducted before spearheading a new structured mentoring program. These needs assessments serve as a blueprint for which events, workshops or panels are necessary to maximize success for your students. Planning of workshops, mentoring events, and recruitment requires engaged faculty, staff, and students that can effectively communicate and work as a team to provide a program that is attentive to needs of the mentees, mentors, and the changing educational environment. Institutional buy–in and resources such as a mentoring program director and program coordinator are paramount. *EMPACT* opens the door to the dramatic impact that educational institutions can have on URiM learner professional development and academic success via a well-guided structured mentoring program. Our program attempted to maximize impact via regular and consistent feedback to adapt to the changing needs of both mentors and mentees.

Increasing the number of physicians from historically excluded communities requires a careful consideration of the factors that contribute to this problem. *EMPACT* provides a model of how to create and implement a successful mentorship program that addresses contributors to low retention and increased attrition of URiM students. Mentoring programs such as *EMPACT* can promote effective mentor training, physician–student relationships, and success in medical school and their medical careers for mentors and mentees.

Ethics Statement

The Emory University School of Medicine's Institutional Review Board (IRB) determined this quality improvement study was exempt from further review in May 2020. Additionally, the IRB policy states that our category of human subjects research is exempt from additional informed consent, as it is, "Research that only includes interactions involving tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) since the following criteria met: The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subject; and that any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation".

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Disclosure

The authors have no conflicts of interest to report.

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