

Middle School to Medical School (M2M): An outreach program developed and implemented on the Anschutz Medical Campus encouraging underrepresented in medicine (URM) middle school students to pursue careers in medicine



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INTRODUCTION

The diversity of the US population is not reflected in the composition of the current physician workforce. This lack of diversity is believed to contribute to health care disparities among racial and ethnic minority groups. In order to increase diversity in the healthcare workforce, there must be a focus on strengthening the recruitment efforts on students who are underrepresented in medicine (URM). Several initiatives promoting health careers among the URM already exist, but the majority of these programs focus on high school or undergraduate students. Very few programs target younger students, specifically middle school youth, who frequently have an initial fascination with some facet of science at an early age.

PURPOSE

The goals of the M2M program are to (1) encourage a positive attitude towards higher education; (2) to increase interest and encourage URM students to pursue a career in a health profession; (3) to increase confidence and self-efficacy in pursuing any health care career; and (4) to increase students' confidence and self-efficacy in specifically becoming a physician.

METHODS & DESIGN

The program is a one day, hands-on and interactive curriculum where URM students from Skinner Middle School visit the Anschutz Medical Campus to participate in several educational workshops and activities led by CU medical students with faculty liaisons present as additional leadership and supervisory support, as described in Table 1.

Time	Curriculum Component	Details
9am	Participant Arrival	Participants arrive and are provided a catered breakfast followed by icebreaker activities
10am	Activity 1: Anatomy Lab	Review of important anatomy, physiology and pathophysiology of the human heart, lungs, and brain, with hands-on learning using healthy and diseased pathology specimens
11am	Activity 2: Ultrasound Workshop	Review of how ultrasound works with hands-on ultrasound lab
1pm	Lunch	Participants provided a catered lunch
12:30pm	Activity 3: Campus Tour	Tour of the Anschutz Medical Campus including the Medical Education building, the Department of Human Anatomy Bone Room, and Strauss Family Library
1pm	Activity 4: Introduction to Health Professions	Presentation on various health professional careers including medicine, nursing, physician assistant, pharmacy, physical therapy, and dentistry
1:30pm	Activity 5: Jeopardy Game	Participants divided into teams where they answer questions to assess knowledge obtained throughout the day
2pm	Activity 6: Medical Student Panel	Medical students share stories of their educational journey followed by Q&A with the participants

Table 1: Summary of program curriculum elements.

Anonymous pre-and-post evaluation surveys were implemented and completed by the participants. The pre-surveys were completed before the students arrived to the Anschutz campus and the post-surveys were completed immediately upon conclusion of the program, prior to students' departure. The surveys featured a quantitative section assessing the variables mentioned in Table 2 using a 5-point Likert scale, from 1=Strongly disagree to 5=Strongly agree. Data were analyzed using paired two-sample t-tests, with P-values provided as applicable. The post-surveys also collected qualitative feedback using open-ended questions on what the students enjoyed and did not enjoy about the program. The survey instruments were submitted to COMIRB and were subsequently approved under the exempt determination.

RESULTS

A total of 18 students participated in the 2019 iteration of the program. Demographic information on all participants was provided by the ACCESS after-school program director. The majority of participating middle school students were in 7th grade (56%) and of underrepresented minority backgrounds, with Hispanic being the highest reported race.

In general, after participation in the program, the students had increased interest and self-efficacy in pursuing careers in medicine and other health professions (Table 2). The students also expressed significantly greater interest in becoming health care providers other than doctors (3.1 pre vs. 3.4 post, $p < 0.05$). The students also showed improved self-efficacy in reporting significantly greater confidence in possessing the knowledge needed to become a medical doctor (3.5 pre vs 3.9 post, $p < 0.05$).

In reviewing the program evaluation responses, overall the majority of participants expressed enjoyment of the program with 77% stating that they would recommend the program to a friend. Participants were also asked to write down one thing they learned that day. There were a variety of responses with at least one participant who commented on the student panel stating "I learned from all the med students that no matter the situation or struggle believe[sic] in yourself and that you are your own self motive."

Measure	Mean		P-Value
	Pre	Post	
Interest in becoming a medical doctor	3.33	3.56	0.130
Interest in becoming a health care provider (non-physician)	3.11	3.44	0.015*
Confidence in having the knowledge/intelligence to become a medical doctor	3.50	3.89	0.024*
Confidence in having the knowledge/intelligence to become a health care provider (non-physician)	3.53	3.53	0.50
Belief that others of the same race/ethnicity can become a medical doctor	4.76	4.65	0.166
Belief that others of the same race/ethnicity can become a health care provider (non-physician)	4.75	4.75	0.50

*Significant at $p < 0.05$

Table 2: Summary of quantitative measures pre- and post-participation in the M2M program.



Figure 1: Picture of participants and volunteers from 2019 iteration at Anschutz campus.

CONCLUSIONS AND LIMITATIONS

In the United States, ethnic minorities experience more disparities in health care compared to white Americans. Increasing diversity in the health care setting is a well-known and important solution to improving cultural competency and eliminating these healthcare disparities. This outreach program was created in an effort to encourage URM middle school students to consider a career in healthcare and to improve self-efficacy about possessing the qualities and knowledge needed to become a medical doctor or enter another health profession. This program is unique due to the fact that our target population is middle schoolers in the 6th, 7th, and 8th grades.

Overall, our students demonstrated that by the end of the program, they had an increased interest in becoming a health care provider (non-physician) and that they possessed the confidence in having the knowledge/intelligence to become a medical doctor. Our results, along with other research papers, show that it is beneficial to introduce URM students to science and the health professions at a young age in order to build and continue to develop that interest throughout adolescence.

Increasing the amount of programs that can partner local URM youth with health professional schools can begin to increase the amount of URM students in health professions and ultimately bridge the gap between racial and ethnic minorities and healthcare disparities.

Some limitations to our program include the fact that it is a one-day program as compared to other similar programs that offer a more longitudinal experience. We cannot comment on long term effects of this program. Another limitation that could have impacted our data collection is that some students attended the program in both the 1st and 2nd iteration and therefore experienced similar workshops as well as our small sample size.

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