How To Simultaneously Increase Diversity Among Physicians And Improve Physician Distribution To Medical Underserved Areas and Health Provider Shortage Areas.

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PURPOSE

To describe preliminary data from a revolutionary medical career mentorship program that seeks to provide physician mentors and academic support for disadvantaged premedical students. By selecting college students from disadvantaged communities, they will more likely choose to serve voluntarily in medically underserved communities after their medical training.

INTRODUCTION

Health care access disparities exist at the population level and within the medical education pipeline itself. There are 65 million people living in Health Provider Shortage Areas (HPSA), according to the U.S. Department of Health and Human Services. Currently 20% of Americans live in rural areas, but only 9% of physicians live there.[1] It is well known that cultural backgrounds affect the doctor-patient relationship and there has been historic underrepresentation of minorities in medical education.[2,3] Minority students often lack the social, academic, and financial resources that cultivate and sustain interest in medical careers. Furthermore, available data suggests that minority students frequently have lower undergraduate grade point averages, Medical College Admission Test (MCAT) scores, and United States Medical Licensing Examination (USMLE) Step 1 scores.[3] Fortunately, USMLE Step 2 scores and beyond increase to meet national averages.

The 2003 Graduate Medical Education Survey administered by the Association of American Medical Colleges suggested that minority medical students don't choose to serve medically underserved populations based on their own ethnicity or socioeconomic status.[4,5] This may mean that programs guaranteeing medical school slots to applicants purely on the basis of race don't work because physicians often serve people like whom they were born and raised. Additionally, the U.S. Supreme Court has instructed us to abandon race-based recruitment.[6]

Historically, academic Premedical Enrichment Programs are relatively rare and limited by class sizes and access to a university campus. The Medical Mastermind Community was developed in 2008 to bridge the gaps in academic and social support for future physicians by providing scientific education, personalized career counseling, and a long-term supportive community for participants. A Mastermind Group is defined as group of 2 or more people working together in harmony towards a common goal.[6-8] For the purposes of this study, collaborative groups included premedical students, medical students, residents and licensed physicians who shared the common goal of increasing the chance of premedical students' matriculation into medical school.

METHODS

A list of 363 colleges and universities located in counties federally-designated as Health Provider Shortage Areas and/or Medically Underserved Areas was compiled. A random, pilot

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sample of 5 schools was contacted and recruited for participation. All students interested in a career as a physician were invited to participate in a one-year, teleconference style mentorship program which included didactic lectures about the field of medicine, academic resources, study skills training, access to physicians and current medical students, and group discussions. After one year, a survey was electronically mailed to the participants. Pre- and post-intervention outcome measures included perceived level of anxiety, stress and burnout, Grade Point Average (GPA), MCAT scores, and interest in serving medically underserved communities. This study was approved by the institutional review board at the American Institutes for Research.

RESULTS
Seventy-six students were enrolled, provided informed consent, and were mentored by physicians and provided academic support for one year. Forty-two (55.3%) were male and 34 (44.7%) were female. An overwhelming number of students (65; 86.7%) reported decreased stress, anxiety, and burnout after one year. Forty-three students were able to report changes in MCAT scores, while 32 had not yet taken the test. Seventy-nine percent of students reported increased MCAT scores. The average overall MCAT score improvement was 3.37 points, with a range of 0-10. Fifty-one students were current undergraduates, able to report GPA changes, while 25 were Postbaccalaureate. Sixty percent reported an increase in their GPA. The average GPA increase was 0.39 on a 4.0 scale (~10% increase), ranging from 0-1.5. Finally, 72 students (94.7%) reported an interest in practicing in medically underserved communities.

CONCLUSIONS
This study demonstrates that tele-mentoring programs can be effective in increasing the academic competitiveness of disadvantaged premedical students. Physician mentorship and sound career advising appear to decrease stress, anxiety and burnout. It also supports earlier work that suggested that culture of origin and life experiences help shape physician's preferences of practice settings.[4] Geo-targeting premedical students for mentorship appears to be a viable way to locate and increase the number of competitive disadvantaged premedical students in the applicant pool.

A larger cohort needs to be followed to elucidate if physicians born and raised in medically underserved communities truly serve in culturally similar conditions after their training, as this may help alleviate health disparities. Longer longitudinal studies are needed to assess the medical school matriculation rates of consistently and appropriately mentored, *previously disadvantaged* premedical students. Other outcomes could be MCAT and USMLE scores that normalize among minority groups earlier in the education process, burnout and suicide prevention interventions, and overall career satisfaction.

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Figure 1: Increase in Overall MCAT Scores After One Year of Tele-Mentoring with the Medical Mastermind Community.
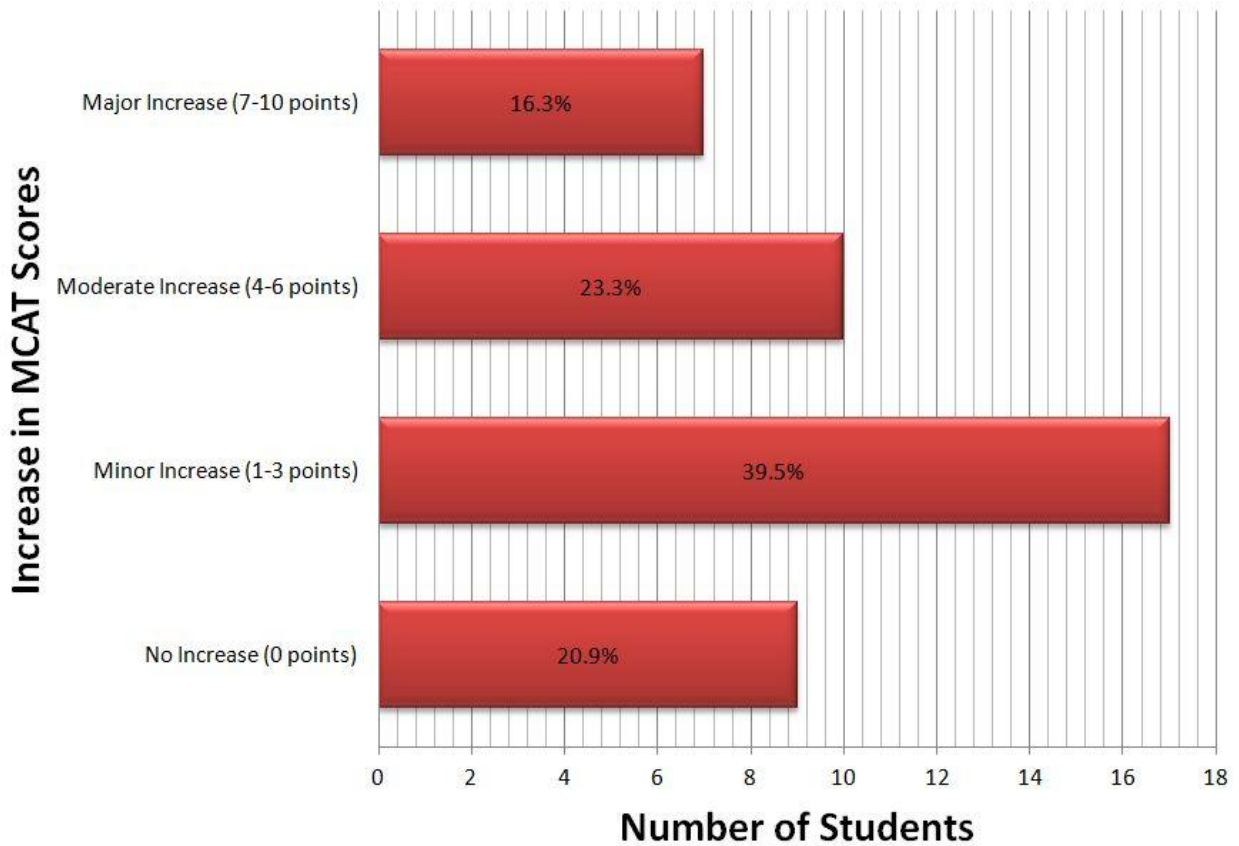
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Figure 2: Increase in Grade Point Average (GPA) After One Year of Tele-Mentoring With the Medical Mastermind Community.
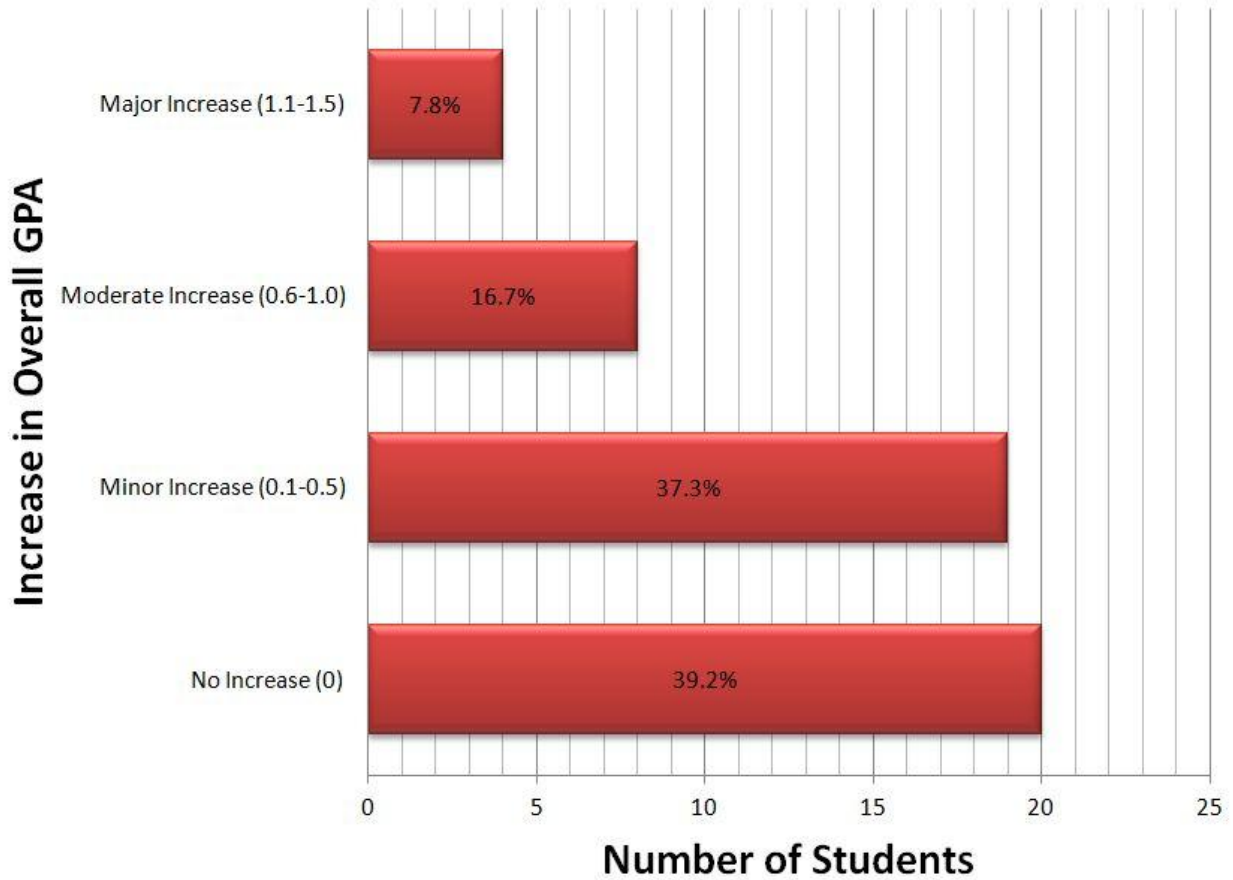
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