Promoting Access to Medical Education for Low-Income Students

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Abstract:
In 2001, the 77th Texas Legislature established a statewide BS/MD/DO pipeline program called the Joint Admission Medical Program (JAMP) to increase opportunities for economically disadvantaged Texas students to access medical education. JAMP partners all of the state's four-year public and private colleges and universities with Texas's nine medical schools. The first JAMP students entered the undergraduate component of the program in 2003. This group of students and subsequent cohorts of entering students were recruited, tutored, counseled and mentored by health professions advisors known as JAMP Faculty Directors (JFDs). To date, 1076 Texas undergraduate students have entered JAMP, 538 students have matriculated into a Texas medical school and 196 JAMP students have earned the MD/DO degree. JAMP is off to a strong start and the JFDs are a recognized as a major contributor to the program's success.

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Introduction

Low income students face numerous challenges in accessing medical education. They go to college less frequently than middle- and high-income students; they complete college at lower rates; and they attend four-year colleges and select schools with substantially less frequency[1]. Therefore, it is not surprising that the Association of American Medical Colleges (AAMC) has reported that entering medical students from the lowest income quintile has never been greater that 5.5 percent of entering medical students[2]. To address this inequity, the State of Texas began a bold experiment when it authorized and funded pioneering legislation in 2001 to increase access for well-qualified, economically-disadvantaged Texas students to medical education. The program was named JAMP, the Joint Admission Medical Program. JAMP partners Texas's nine medical schools and 32 public and 34 private four-year colleges and universities in the state in a comprehensive BS/MD/DO pipeline program that uses low economic status to determine eligibility for the program, along with more traditional criteria. (Note: An additional public university was added to JAMP after the study was completed.) For the purposes of JAMP, low economic status is defined by eligibility for a Pell Grant, or an Estimated Family Contribution up to $8,000, calculated from the Free Application for Federal Student Aid.

JAMP includes the most successful elements of BS/MD/DO programs. Program features include conditional acceptance into a Texas medical school, scholarships, travel stipends, summer enrichment programs at Texas medical schools, financial support for JAMP operations at public undergraduate institutions and Texas medical schools, including support for faculty members, called

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JAMP Faculty Directors (JFDs). JFDs recruit, counsel and mentor, and arrange tutoring support for JAMP students. While private Texas universities participate in JAMP, state funding can only be budgeted for public undergraduate institutions.

JAMP is governed by a council, comprised of representatives from the nine Texas medical schools, with each school having a JAMP Council member and a council alternate. At each meeting of the JAMP Council, two to three JAMP JFDs attend and provide guidance on operational issues and student concerns. The council meets at least three times each year to monitor student progress, admit students into the program, formalize policies and procedures, and approve an annual operating budget. JAMP is headquartered and managed the University of Texas System.

JAMP students are required to maintain a cumulative and science GPA of 3.25. Students who meet GPA eligibility requirements and score at least a 25 on the Medical College Admission Test (MCAT), with no section less than 7, are guaranteed admission to a Texas medical school. JAMP students who fail to meet program eligibility requirements are replaced with alternate students who meet these academic standards. Academic performance of all JAMP students is reviewed by the JAMP Council at the end of each semester. Students who fail to meet program requirements are placed on probation and given an opportunity to correct shortcomings.

The first class of 81 Freshman JAMP students entered the program in March 2003. To date, 1076 have entered JAMP (Cohorts 2003-2014) from which 538 students have matriculated into a Texas medical school. Adjusting for current JAMP undergraduate students who have yet to attend medical school (JAMP Cohorts 2012-2014) the acceptance rate to medical school for JAMP Classes 2003-2012 to date is 61%. From the first four JAMP Cohorts, 166 students graduated from a Texas medical school (within five years), a current graduation rate of 89%, which is slightly lower than the five-year graduation rate of 91.3% reported by the AAMC[3]. These physicians are now in residency and fellowship training programs. Their progress will be reported at a later date.

During the undergraduate phase of the program, JAMP Faculty Directors (JFDs) have been instrumental for the initial success of program by recruiting qualified applicants, and then counseling and mentoring selected students. JFDs are often the health professions advisor at their respective institution. They are an essential source of information for the program improvement and were surveyed in October of 2012 to better understand their perceptions of the program regarding a broad range of academic and operational issues that impact JAMP's effectiveness in

Table 1. JAMP Cohorts 2003-2014

JAMP Cohorts	Applications Submitted	Entering Students	Medical School Matriculants	Earned MD/DO Degree
2003[1]	218	81	34	31
2004[2]	196	69	47	38
2005	148	69	43	39
2007[3]	120	69	42	39
2008	202	96	63	49
2009	224	98	57	NA
2010	273	152	82	NA
2011	326	150	103	NA
2012	354	96	67	NA
2013	287	96	NA	NA
2014	295	100	NA	NA
Total	2643	1076	538	196

1. In 2003, students were first accepted into the JAMP program during their freshman year.
2. In 2004, alternates entered the program to fill vacancies as they occurred.
3. In 2007, JAMP changed the entering year for students to the spring semester of their sophomore year. The change resulted in no students entering JAMP in 2006.

increasing access to medical education for economically disadvantaged Texas students.

Methods

JFD Survey Creation. The survey was created by program administrators, members of the JAMP Council and JAMP medical school coordinators, who coordinate activities at the nine Texas medical schools. Additionally, three JFDs were also interviewed qualitatively by telephone to receive their input and to help the researchers generate new ideas for the JFD survey questions.

The JFD survey consisted of 81 selected response items covering aspects of the program, barriers faced by students, program incentives, and services provided. Two opened-ended response items were also included asking for opinions for program improvements and specifically how to increase JAMP visibility. The survey was administered through Survey Monkey in 2012 and 2014. The 2012 survey served as a pilot study, and we used results from it for internal evaluation purposes. Only the results of the 2014 survey are reported in this article.

Participants. The JFDs for each institution in Texas were contacted in advanced and informed of the purpose of the survey. All 66 JFDs at Texas universities received survey instructions and a link through in an email. Over the course of the following two weeks follow-up emails were sent to the JFDs to remind them to participate in the survey, in accordance with recommendations from Dillman[4]. Of all 66 JFDs 49 (74.2%) responded to the survey, with the response rate again being higher for respondents at public universities (30 of 32 JFDs, or 93.8%) than private universities (19 of 34 JFDs, or 55.9%).

Results

Table 2 shows the results from the section of the JFD survey where respondents were asked to rate how strongly they agreed with statements about general aspects of the JAMP program. As the table shows, JFDs find JAMP to be a highly beneficial program to their institutions, both JAMP and non-JAMP students, and even their local communities. JFDs also indicate that they have support from academic personnel at their institutions (e.g., deans, vice presidents of academics) and that cutting funding to JAMP would be detrimental to their institutions, students, and Texas society as a whole.

Not shown in Table 2 is an item where JFDs were asked about which groups of premed students at their institution benefit from JAMP. In descending order, the JFDs rated that low-income students (M = 4.59, SD = 0.67), racial/ethnic minority students (M = 4.24, SD = 0.88), first generation college students (M = 4.49, SD = 0.71), students from medically underserved communities (M = 4.24, SD = 0.88), students from low-income inner city neighborhoods and schools (M = 4.18, SD = 0.86), and rural students (M = 4.10, SD = 0.90) all benefit from the program. However, JFDs stated that non-traditional students did not benefit (M = 2.55, SD = 1.32).

Because of their backgrounds many JAMP students encounter difficulties in their undergraduate education. Table 3 shows a list of difficulties that JAMP students

Table 3. JFD Survey Respondents' Ratings of the Difficulty JAMP Students Have in Overcoming Barriers

Difficulty	Mean	SD
Overcoming poor high school preparation, particularly in science and math	3.85	1.13
Achieving success on the MCAT	3.84	1.03
Managing time demands (e.g., juggling work and school for some students)	3.84	0.87
Realizing success in difficult classes (e.g., organic chemistry, cell biology, etc.)	3.78	0.96
Finding solutions to inadequate financial resources in college	3.73	0.92
Lacking sound and effective study skills	3.65	1.09
Coping with inadequate family support	3.63	1.06
Maintaining high enough grades for ongoing advancement	3.55	1.04
Adapting to the demands of college	3.55	0.98
Navigating the complexities of the higher education system	3.27	1.15
Taking college classes in English (for non-native English speakers)	2.88	1.09
Note. Items are arranged in descending order of agreement. All items were presented on a 5-point Likert scale: 1 = not difficult at all, and 5 = very difficult.		

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Table 2. JFD Survey Respondents Mean Level of Agreement with Statement About JAMP Texas Medical Schools

	Mean	SD
An important component of JAMP is students' two summer experiences at Texas medical schools.	4.76	0.66
Students believe that being selected for JAMP is a significant honor.	4.69	0.71
I believe JAMP is a beneficial program.	4.67	0.77
If a JAMP student does not earn the minimum MCAT scores on their first attempt, the student should be able to re-take the test.	4.47	0.84
JAMP enhances student beliefs that they can become physicians.	4.45	0.82
JAMP students receive non-academic benefits from the program.	4.42	0.92
JAMP helps students to maintain the motivation they need to become physicians.	4.39	0.91
I am satisfied with the communication between the JAMP representatives and my undergraduate institution.	4.39	0.95
JAMP students are bright college students who just need more support to succeed in their education.	4.39	0.93
I believe that JAMP is a useful tool for reducing some inequalities in society in Texas.	4.35	1.01
JAMP has helped to increase interaction among health professions advisors in Texas undergraduate institutions.	4.33	0.90
Academic administrators (i.e., deans, academic vice presidents, etc.) support JAMP at my institution.	4.29	1.02
Academic administrators (i.e., deans, academic vice presidents, etc.) are aware of JAMP at my institution.	4.27	0.93
JAMP officials listen to feedback from my institution.	4.24	1.01
JAMP helps economically disadvantaged students who otherwise would not be admitted to medical school.	4.22	1.07
Health-related volunteer opportunities are available to JAMP students.	4.18	1.09
Academic administrators (i.e., deans, academic vice presidents, etc.) view JAMP as having a favorable impact on undergraduate education in the institution.	4.18	0.95
Participating students at my institution feel that JAMP offers a socially supportive environment.	4.14	0.96
JAMP has improved premedical and health professions advising for all students.	4.04	0.96
Reduced JAMP funding would have a negative impact on JAMP operations at my institution.	3.98	1.32
It is beneficial for JAMP students to meet with staff from every medical school.	3.96	1.17
JAMP has increased student interest in careers in medicine and the health professions.	3.96	0.89
JAMP students receive mentoring in life skills at my institution.	3.96	0.91
Communication between my institution and Texas medical schools has improved since JAMP started.	3.94	1.22
JAMP has increased understanding among faculty and staff of the diverse challenges confronted by economically disadvantaged pre-medical students.	3.84	0.80
If JAMP funding were reduced, fewer pre-med students from my institution would be accepted to medical school.	3.82	1.202
Undergraduate faculty at my institution understand the expectations that faculty at Texas medical schools have for applicants.	3.78	0.99
It is beneficial for JAMP students to have admissions interviews with staff from every medical school.	3.76	1.25
Science departments (e.g., biology, chemistry, physics, etc.) at my institution benefit from the existence of JAMP.	3.61	1.17
JAMP has helped my institution improve the structure of our pre-med program for all undergraduates.	3.47	1.21
Diversity among students in my institution's pre-med program has increased since JAMP.	3.37	1.20
JAMP has led to an improvement of math and science tutoring services at my institution.	3.29	1.28
The local community directly benefits from having JAMP at my institution.	3.27	1.27
JAMP has created new opportunities for premedical and pre-health professions students to be mentored by local physicians.	3.22	1.16
Non-premed students majoring in the sciences benefit from the presence of JAMP on our campus.	3.14	1.31
JAMP funds have helped to secure additional institutional funding to support premedical and health professions programs.	3.10	1.40
There is tension between JAMP students and other pre-med students at my institution.	1.80	1.12
Note. Items are arranged in descending order of agreement. All items were presented on a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.		

experience and how difficult JFDs believe those difficulties are to overcome. As is readily apparent, JFDs believe that the MCAT is the biggest hurdle for JAMP students, followed by time management and academic difficulties (such as overcoming inadequate secondary education or passing difficult courses).

JFDs were also asked how strong JAMP incentives and components were for potential JAMP students. The strongest incentives were (in descending order) guaranteed admission to a Texas medical school (M = 5.00, SD = 0.00), MCAT preparation (M = 4.71, SD = 0.58), summer experiences (M = 4.65, SD = 0.60), financial aid (M = 4.28, SD = 1.07), the structure provided to help students work toward their career goals (M = 4.19, SD = 0.75), non-academic experiences (M = 3.88, SD = 0.88), out-of-class academic experiences (M = 3.82, SD = 0.97), and tutoring (M = 3.80, SD = 1.06).

Finally, JFDs were asked which JAMP services they offer at their institution. The authors believed that this was an important question for the survey because JFDs have a degree of flexibility in deciding how JAMP is implemented on their campus. Table 4 shows the services that are provided to JAMP students at the respondents' institutions. By far the most common services were mentoring (91.8%), tutoring (85.7%), and JAMP recruitment (83.7%). No other service was provided at more than two-thirds of respondents' institutions.

Discussion

Since the first students entered JAMP in 2003, a great deal has been learned about how to assist economically disadvantaged Texans access medical education. Overall, the JFDs rated JAMP favorably and ranked guaranteed admission into a Texas medical school as the major incentive of the program. The JFDs identified the two summer medical school programs as the extremely important in helping students understand the medical education process and motivating them to achieve their goals. MCAT preparation programs and financial aid were also ranked highly as strong incentives. The JFDs also identified the primary barrier to student success in JAMP was the MCAT and reported that tutoring, mentoring and recruitment were their primary activities. In open-ended responses to both surveys JFDs suggested that more financial support for students would be beneficial and that

Table 4. Frequency and Percentage of Respondents Who Indicated that Services Were Offered to JAMP Students at Their Institution

Service	Frequency	%
Mentoring	45	91.8
Tutoring	42	85.7
JAMP recruitment	41	83.7
Teaching college success skills (e.g., study skills, time management, etc.)	30	61.2
JAMP student activities	27	55.1
Non-academic activities	25	51.0
MCAT preparation	25	51.0
Creating workshops/meetings about medical topics	24	49.0
Medical enrichment activities	22	44.9
Travel	19	38.8
Social and behavioral training	15	30.6
Buying reference books, textbooks, and other academic materials	15	30.6
Buying computer equipment and/or software	8	16.3
Incidental expenses (e.g., school supplies)	8	16.3
Other[a]	8	16.3
Technological training	7	14.3
Buying laboratory equipment	5	10.2
[a]Some JFDs at private institutions indicated that they did not receive JAMP funds, but used existing university resources to provide some of these services (especially tutoring) to JAMP students.		

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the program should not require all JAMP students who met eligibly requirements interview at all of the state's medical schools. These are excellent suggestions that are being addressed by the JAMP Council. An additional benefit of JAMP identified by the JFDs was that the program has helped to strengthen health professions advising at Texas undergraduate institutions. One JFD wrote, "The JAMP program has changed lives at my institution." Another JFD shared, "Although the number of students is small compared to the overall premed population, JAMP does act as a spur for improved services to all pre-med students."

JFDs are the on the front line of the program and they have been instrumental in making the Texas experiment work. JAMP is a popular program in Texas and it has strengthened levels of communication and understanding between Texas undergraduate institutions and Texas medical schools. Perhaps JAMP's greatest contribution has yet to be realized as young doctors complete their residency and fellowship training programs and enter medical practice.

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