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Strengthening the Community College Pathway to Medical School: A Study of Latino Students in California

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BACKGROUND AND OBJECTIVES: One third of Latino medical students begin their premedical undergraduate education at a community college (CC) or 2-year college, compared to a 4-year university. This study explored the academic and personal experiences Latino premedical students commonly encounter at the CC.

METHODS: In 2013, five focus groups with Latino premedical and medical students (n=45) were conducted in Los Angeles and San Jose, CA. All students were enrolled or attended a CC. In addition, 20 CC key informants participated in semi-structured interviews to further describe the Latino CC premedical experience. The focus group and key informant transcripts were transcribed and analyzed for common themes using qualitative methods.

RESULTS: Content analysis of 2,826 distinct comments identified major themes: (1) Personal health-related experiences in underserved communities, (2) CC relevant premedical guidance, (3) Limited preparation in navigating the pathways to medical school, and (4) Competing demands and college affordability.

CONCLUSIONS: Early CC enrichment programs with direct ties to health professions advising programs, 4-year universities, medical schools, and physician mentors are needed to support Latino pre-medical students.

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representation at 34%, compared to 27% for whites.¹⁶ CC attendance, however, was a negative predictor of acceptance to medical school, when compared to students who exclusively attended a 4-year university.¹⁶ While the CC pathway may be perceived as less academically rigorous, less is known about the experiences premedical students encounter when using the CC pathway to medical school.

Community colleges provide 2-year general education and are a stepping-stone to a 4-year university. California has one of the largest CC systems in the United States, with 112 CCs and enrollment reaching 2.5 million out of the 8 million CC students throughout the United States. CCs have a larger percentage of URM, women and students from low socioeconomic backgrounds, compared to 4-year universities.^{17,18}

Diversity of the physician workforce improves health care access, ensures culturally competent care, and increases patient satisfaction.¹⁻⁹ The Institute of Medicine, American College of Physicians, and Association of American Medical Colleges (AAMC) also champion diversity of the physician workforce and the need to increase underrepresented minorities (URM) in medical school.¹⁰⁻¹² Latinos make up 17% of the US population,

making it the largest minority group; however, only 8% of the applicants and matriculants to medical school share this background.^{13,14} In the last 3 decades, the shortage of Latino physicians has worsened despite a rapidly growing Latino population.¹⁵

A recent national study found that one third of first-year medical students began their college education at a community college (CC), and Latinos had the largest

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Latino students represent 25% of students enrolled at a CC, compared to 13% of students at a 4-year university.¹⁹ CCs remain an affordable and accessible college educational pathway for URM students who do not have the financial support to attend a 4-year university. Organized medical school pipeline efforts targeting CC students to become physicians have been limited.

Latino premedical students who attend a CC may face additional individual and institutional barriers when aspiring to attend medical school. Previous studies describe the lack of financial, academic, and social support URM medical students receive and the racial stereotyping and discrimination they also confront while in medical school.²⁰⁻²² This qualitative study describes the experiences Latino premedical students encounter when they attend a CC in California.

Methods

Design

A community advisory board (CAB) composed of California premedical advisors, counselors, and medical school admissions committee members was convened to advise the study team. The CAB identified an increasing number of Latino premedical students at the CC compared to 4-year universities. The CAB's e-mail contact lists of 90 leaders and support staff who work directly with CC pre-health students in public non-profit CCs was used to recruit (1) Latino undergraduate premedical and medical students who previously or were current CC students and (2) CC counselors, advisors and faculty, and medical school admissions faculty. Participants contacted the study team via e-mail or phone to schedule their participation in a focus group or key informant interview. Institutional Review Board approval was obtained from the University of California, Los Angeles.

Data Collection

A total of 45 Latino students from 16 CCs in California participated in

five focus groups between May and August 2013, in Los Angeles and San José, CA. Eligible participants included current CC students and those that successfully transferred to a 4-year university or were accepted to medical schools to provide a wider range of perspectives on the perceived facilitators and barriers Latino premedical students encounter at a CC. To supplement the respondent focus groups, 20 individual semi-structured interviews were conducted using a convenience sample of key informants from 12 CCs, and four out of the 10 allopathic medical schools in California. These key informants included CC counselors, advisors, health professions program directors, science teachers, and medical school admissions committee members. All participants signed an informed consent form and received a \$25 gift card incentive.

Focus Group Sessions

Focus groups were used to acquire in-depth information and reveal themes useful in generating hypotheses about the personal and academic premedical experiences Latino students encounter at the CC.²³ An interview guide was used to ask introductory questions regarding high school preparation, career interest and guidance, socioeconomic background, and family, peer, and counseling support.

Each 1-hour focus group was held in a private classroom and digitally audio-recorded. Before conducting the focus groups (ET and KG), participants answered questions in English about their race-ethnicity, country of origin, gender, ability to speak Spanish fluently, and CC experience. One interviewer led the discussion, while the other collected consent forms, took field notes, and audio-recorded the session. The interviewers (ET and KG) asked students open-ended questions developed using Tinto's Student Integration Model as a framework and advice from the CAB to elicit detailed responses.²⁴

Key Informant Interviews

Key informant interviews took place in person or by telephone, each lasting approximately 45 minutes. Key informants' comments expanded on the facilitators and barriers premedical students encounter at the CC.

Data Analysis

The focus group discussions and interviews were transcribed verbatim by a third party academic transcription service and then reviewed by the interviewer for accuracy. Personal identifiers were redacted. Two research team members (ET and KG) read the transcripts several times in an iterative process and used immersion and crystallization methods to identify recurring themes.²⁵⁻²⁷

The reviewers initially used an open coding method, iteratively adding, revising, and rearranging various codes until there was agreement between coders. Tinto's Student Integration Model was used as a framework to guide the analysis.²⁴ A senior researcher on the team (GM) adjudicated any discrepancies in coding the transcripts. A comprehensive codebook was developed to sort the codes into themes. Validity of the analysis was assured by multiple coders, an audit trial, and respondent verification.²⁵ The study investigators were from different disciplines (medicine, public health, education, counseling, anthropology) and included students and program directors. ATLAS.ti qualitative software (ATLAS.ti Inc 6.0, Berlin, Germany) was used to organize and manage the data.

Results

The five focus groups had an average of nine participants each (range 7–12), for a total of 45 students who were currently attending or previously attended a CC. Of the 45 participants, 30 (67%) were women, 37 (82%) were Mexican-American, 8 (18%) were Central American, and 30 (67%) of them identified themselves as fluent in Spanish. Characteristics of the focus group participants are in Table 1.

Table 1: Characteristics of Participants

Focus Group Participant Characteristics (n=45)	n	%
Race-ethnicity		
Latino	45	100%
Gender		
Female	30	67%
Nationality		
Mexican-American	37	82%
Central-American	8	18%
Fluent in Spanish language	30	67%
Community college distribution		
Currently enrolled in a community college	30	67%
Transferred to a 4-year university	5	11%
Currently in medical school	10	22%
Key Informant Participant Characteristics (n=20)	n	%
Gender		
Female	13	65%
Community college distribution		
Counselors	8	40%
Science instructors or professors	2	10%
Community college enrichment program directors	8	40%
Medical school admissions faculty and staff	2	10%

Focus Group Taxonomy

The 2,826 meaningful quotes generated by content analysis were classified using Tinto's Student Integration Model (reference) that focuses on "individual characteristics and preparation," "support networks," and "educational institutions" as important elements of undergraduate student success.²⁴ Major facilitators to medical school included: (1) personal health-related experiences in underserved communities and (2) CC relevant premedical guidance. Major barriers to medical school included: (1) Limited preparation in navigating the pathways to medical school and (2) competing demands and college affordability.

Facilitators to Medical School

Personal Health-Related Experiences in Underserved Communities. CC students commonly referred to growing up in medically underserved communities as a

primary source of motivation to pursue a career in medicine. CC students' shared how experiences taking care of ill family members who had limited access to health care motivated them to become physicians. One participant commented, "I had ill family members, and when they weren't able to get the medical help they needed, this really encouraged me to pursue medicine, to be able to help my family and community." Key informant interviews described similar observations. A CC counselor added, "She had a love for medicine because of the experience she had taking care of chronically ill sister—all the medical appointments, at least three, four, five times a day, five times a month."

CC Relevant Premedical Guidance. CC students described themselves as the first in their families to receive a college education and first to become physicians in their

communities. Both focus groups and key informant interviews revealed that CC students too often rely on their peers to provide them with the knowledge and resources to get through the CC premedical coursework. One student mentioned that "A student at an advanced level can help other students, because counselors are busy and often only have time to hand you a printed paper advising you on what classes to take..." (Table 2).

Role models and mentors in health fields were another resource that students and key informants identified as important for CC students. Students relied on medical student and physician mentors from the community for advice on how to successfully apply to medical school. One participant commented, "I was really lucky that my mentor at the CC explained to me how important GPA and MCAT were to have a strong application." Participants

Table 2: Sample Comments From Focus Groups of California Community College Premedical Students and Key Informant Interviews Regarding Facilitators and Barriers to Medical School

Category	Facilitators to Medical School		Barriers to Medical School	
	Students	Key Informants	Students	Key Informants
Individual Characteristics and Preparation	<p>Personal health-related experiences in underserved communities</p> <p>“I want to focus on ensuring the Affordable Care Act includes undocumented immigrants such as myself and my family, because it was very difficult for my mother to just get access. She had a tumor, so, for her to get treated, it was very costly. So I wanted my mother and other people to be able to access health care. So that’s why I went into—want to go into—the medical field, to change that.”</p>	<p>Personal health-related experiences in underserved communities</p> <p>“Students often have life experiences taking care of their own families who are ill, and this is their way of wanting to give back and help.”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“Not being informed. I had good grades, but I didn’t even apply to universities. I don’t even think I took the SATs?”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“So that [science courses] often can be the discourager. And that’s hard to get around, especially when many of our students come from under-prepared high schools, where they don’t have a curriculum that supports advanced placement or even more rigorous college prep classes.”</p>
Support Networks	<p>Enhancing the premedical pathway with peer, mentor and premedical specific guidance</p> <p>“And she [mentor] helped me out a lot. And then she told me her story. She came from a background similar to mine...Latina, low income...and she went into nursing and then went into premed. And just, she inspires me. She really helped [me] believe in myself.”</p>	<p>Enhancing the premedical pathway with peer, mentor and premedical specific guidance</p> <p>“I would say 90% of the student population is Latino, so I feel it’s really important that they have role models, like, Latino role models in science, technology, engineering, and math, to understand them on a cultural level and to show them that they do have the potential to succeed. So definitely, definitely, support from caring faculty.”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“I was the first in my family to go to school. I couldn’t go to my parents, even though the moral support was there, but they didn’t know exactly what needed to be done. I couldn’t go to any of my other relatives because none of my cousins or aunts or uncles had gone to college.”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“I knew this young woman who had to study in the garage because that was the only place that it was quiet. Her parents didn’t make an effort to have quiet time in the evening so that they could have time to study.”</p>

(continued on next page)

felt supported by mentors who reaffirmed the importance of their students’ cultural, racial-ethnic, and socioeconomic background and its importance in providing culturally competent health care.

CC students commonly acquired the knowledge and academic support

to pursue medicine careers from science technology, engineering, and math (STEM) education programs such as the Math Engineering Science Achievement (MESA) at the CC. These programs, not specific to CC premedical students, provide educationally and economically

disadvantaged students and their families with the personal and academic support to be successful in college. Summer enrichment programs like the Association of American Medical Schools (AAMC) Summer Medical and Dental Enrichment Program (SMDEP) (<http://smdep.org/>),

Table 2: Continued

Educational Institutions	<p>Enhancing the premedical pathway with peer, mentor and premedical specific guidance</p> <p>“The program is for community college students who are interested in science or have an interest in mainly doing research; and what they do is, they’ll allow you to come to campus in the summer for 10 weeks and get a mentor, get a research lab, and do some kind of research.”</p>	<p>Enhancing the premedical pathway with peer, mentor, and premedical specific guidance</p> <p>“I think having a constant barrage of faculty support, counseling support, advising support, mentors, programs, and true, true and genuine, community college-4-year partnerships is what can actually facilitate that and help them move through the pipeline.”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“For me, it was challenging to get the classes that I wanted. That’s why I was taking classes at the four different community colleges.”</p> <p>Competing demands and college affordability</p> <p>“I attended community college due to financial constraints. I completed all of my lower division at a community college, and I saved a lot of money.”</p>	<p>Limited preparation in navigating the pathways to medical school</p> <p>“Once they get into the 4-year university, there’s a lot more premedical opportunities for them, but we’re trying to find opportunities that they can start when they’re here at the community college.”</p> <p>“It’s only until they transfer that they start looking at them, so—and rightfully so. I understand they’re focusing in on the juniors and seniors, primarily, for pre-med programs, particularly in medical schools; but that could be a disadvantage, too, because our students are really not being sought out.”</p> <p>Competing demands and college affordability</p> <p>“If you had financial pressures or you had financial constraints, then you had to work more. And then those students who had to work longer hours were, you know, more likely to have difficulty completing the rigorous requirements or the science requirements for premedical students.”</p>
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Medicos Enfermeros y Dentistas Para El Pueblo (MEDPEP) (<http://uclamedpep.weebly.com/>) and other research and physician mentoring opportunities were referenced as a critical source of academic development. One participant observed, “That [program] really changed my mind about transferring to a university and getting comfortable with the

idea and also convinced me that I could get accepted to medical school.”

Barriers to Medical School

Limited Preparation in Navigating the Pathways to Medical School. CC students commented that their parents serve as a rich source of emotional support. However, their parents’ educational

background limited Latino CC students’ ability to navigate the college system and ultimately get in to medical school.

CC students also described feeling inadequately prepared to succeed in math and science. For many of the students, it was at the CC where they had the first opportunity to take advanced math and science

courses. They attributed their difficulty in excelling in college science courses to their under-resourced high schools. One student commented, “I didn’t feel like high school prepared me for college.” A CC counselor provided further detail, “The percentage of students in low-level math is 70% for every incoming community college freshman class throughout the state, which is very alarming.”

Participants commonly reported struggling with knowing what academic and personal steps to take to ensure a successful pathway to medical school. One participant commented, “I started community college, and I realized, ‘I don’t know what I’m doing,’ and no one in my family had been to college, so I really didn’t know how to fill out the paperwork necessary to go to medical school.” Key informants further supported that too often CC students are the first in their families to navigate the higher educational system, and counseling and advising at the CC is a very limited resource.

Participants reported meeting regularly with counselors to help them successfully carry out their immediate educational plans—transfer to a 4-year university. However, these meetings were less than 15 minutes, insufficient time to address their premedical concerns. One participant commented, “A lot of the counseling in CC is very nearsighted, where their goal is just for you to transfer and that’s it. They don’t really give you enough exposure to what’s out there, in terms of health professions or how to get there.” Key informants confirmed that, due to under-funding, it was challenging to connect their students with CC relevant premedical resources. The most successful counseling took place within the context of a large network of student support services like the Extended Opportunity Programs and Services (EOPS) program. EOPS provides socioeconomically, mentally and physically disadvantaged CC students with academic and financial support services, including but not limited

to preferential enrollment in science coursework.

Participants also described the need for a smoother transition from the CC to the university by having a clearer picture of the steps needed to get in to medical school. One student commented, “I think it would have been easier, once I transferred to [4-year university], to have a plan set in motion. Because when I transferred, it’s like, okay, I’m here, now what do I do, you know? I think if I would have had the guidance a little earlier, I could start preparing for the MCAT, or whatever, or research, and I think that would have helped me more if that was done back in CC.” They further describe the need for an individualized premedical plan at the CC to help them take advantage of medical school preparation earlier in their college path.

Competing Demands and College Affordability. Participants shared the necessity to have multiple non-health related jobs to pay for their education and the burden of having to attend multiple CCs in order to complete required premedical coursework. These financial responsibilities readily compete with the amount of time they can dedicate to their academics, and participants described difficulty finding paid clinical or research opportunities.

Participants who did not have legal documentation for residence in the United States while at the CC did not qualify for government financial assistance and faced other socioeconomic barriers. A student commented taking “CC college courses for over 4 years while waiting for his immigration status to change in order to have the opportunity to get into medical schools.” Participants described transferring and applying to medical school after the passage of the California Dream Act in 2011.²⁸ This law allowed undocumented students to pay tuition at in-state residence levels and be eligible for state funded financial aid.

Discussion

This is the first study to describe the facilitators and barriers encountered by Latino students using a CC pathway to US medical schools. Latino premedical students often begin their college education at the CC because they are the first in their families to pursue a college degree.¹⁶ Enrichment programs like the AAMC SMDEP and MEDPEP that target CC students provide essential premedical counseling and access to medical student and physician mentors. These results can inform national CC recruitment and retention strategies to increase the representation of Latinos in medical school and the future physician workforce. Latino CC students and key informants acknowledge the CC is an important college pathway to prepare students for STEM-heavy professional fields such as medicine.²⁹ The viability of this pathway requires a CC premedical curriculum with direct ties to 4-year universities and medical schools. Supplemental science education at the CC will also help close the minority science-math achievement gaps noted by our key informants in this study. In addition to academic support, Latino CC students’ motivations to return to their communities to serve the underserved may benefit from earlier access to health disparities curriculum.³⁰ Further, the distance traveled by Latino CC students may foster the development of emotional maturity and resilience, character traits that will promote their future success as physicians.

Successful Latino CC premedical students take initiative and apply to enrichment programs, attend counseling appointments, meet with professors during office hours, and attend premedical conferences. Enrichment programs like EOPS, MESA, SMDEP, and MEDPEP provide California CC students with health career counseling. Prior studies show that supplemental science education and mentorship can increase the probability of medical

school acceptance.^{22,31,32} However, premedical-specific enrichment programs at the CC are few and under-resourced due to limited funding, with only a small number of participants compared to the general CC student population.

This study reports a wide range of views from Latino premedical and medical students and opinions about the facilitators and barriers they encounter at CCs. Students provided descriptions of their CC experiences to the best of their knowledge. However, there are limitations to this study. Participants were recruited from California targeting Latino premedical groups at the CCs. Our findings may be limited due to small sample size and not be generalizable to students from other areas of the country, other Latino subgroups, or to other racial or ethnic groups. Quotes are also subject to bias from the reader. We did not collect information on how long the participants have lived in the United States. Future research should explore the experiences of other disadvantaged groups in the United States to compare with these findings.

Increasing the Latino physician workforce will require developing key partnerships between academic medical centers, 4-year universities, and CCs. This study, in combination with previous research, may also encourage medical schools to conduct assessments of how they assess the distance traveled by CC students when reviewing applications to medical school.

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References

- Marrast LM, Zallman L, Woolhandler S, Bor DH, McCormick D. Minority physicians' role in the care of underserved patients: diversifying the physician workforce may be key in addressing health disparities. *JAMA Intern Med* 2014;174(2):289-91.
- Saha S, Guiton G, Wimmers PF, Wilkerson L. Student body racial and ethnic composition and diversity-related outcomes in US medical schools. *JAMA* 2008;300(10):1135-45.
- Guiton G, Chang MJ, Wilkerson L. Student body diversity: relationship to medical students' experiences and attitudes. *Acad Med* 2007;82(10 Suppl):S85-88.
- Yoon J, Grumbach K, Bindman AB. Access to Spanish-speaking physicians in California: supply, insurance, or both. *J Am Board Fam Pract* 2004;17(3):165-72.
- Whitla DK, Orfield G, Silen W, Teperow C, Howard C, Reede J. Educational benefits of diversity in medical school: a survey of students. *Acad Med* 2003;78(5):460-6.
- Perez-Stable EJ, Napoles-Springer A, Miramontes JM. The effects of ethnicity and language on medical outcomes of patients with hypertension or diabetes. *Med Care* 1997;35(12):1212-19.
- Xu G, Fields SK, Laine C, Veloski JJ, Barzansky B, Martini CJ. The relationship between the race/ethnicity of generalist physicians and their care for underserved populations. *Am J Public Health* 1997;87(5):817-22.
- Komaromy M, Grumbach K, Drake M, et al. The role of black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med* 1996;334(20):1305-10.
- Moy E, Bartman BA. Physician race and care of minority and medically indigent patients. *JAMA* 1995;273(19):1515-20.
- Nivet MA. Commentary: Diversity 3.0: a necessary systems upgrade. *Acad Med* 2011;86(12):1487-9.
- Smedley BD, Butler AS, Bristow LR, Institute of Medicine (US). Committee on Institutional and Policy-Level Strategies for Increasing the Diversity of the US Health Care Workforce, Institute of Medicine (US). Board on Health Sciences Policy. In the nation's compelling interest: ensuring diversity in the health-care workforce. Washington, DC: National Academies Press, 2004.
- Groman R, Ginsburg J, American College of Physicians. Racial and ethnic disparities in health care: a position paper of the American College of Physicians. *Ann Intern Med* 2004;141(3):226-32.
- Grumbach K, Mendoza R. Disparities in human resources: addressing the lack of diversity in the health professions. *Health Aff* 2008;27(2):413-22.
- US Census Bureau. Projected population by single year of age, sex, race, and Hispanic origin for the United States: July 1, 2012 to July 1, 2060. Washington, DC: US Census Bureau, 2012.
- Sanchez G, Nevarez T, Schink W, Hayes-Bautista DE. Latino physicians in the United States, 1980-2010: a thirty-year overview from the censuses. *Acad Med* 2015;90(7):906-12.
- Talamantes E, Mangione CM, Gonzalez K, Jimenez A, Gonzalez F, Moreno G. Community college pathways: improving the US physician workforce pipeline. *Acad Med* 2014;89(12):1649-56.
- American Association of Community Colleges. Fact sheet. Washington, DC: American Association of Community Colleges, 2014.
- Ginder SA, Kelly-Reid JE. Enrollment in postsecondary institutions, Fall 2012; financial statistics, fiscal year 2012; graduation rates, selected cohorts, 2004-09; and employees in postsecondary institutions, Fall 2012. Washington, DC: National Center for Education Statistics.
- Fry R, Lopez MH. Hispanic student enrollments reach new highs in 2011: new largest minority group on four-year college campuses. Washington, DC: Pew Hispanic Center, 2012.
- Sanchez JP, Peters L, Lee-Rey E, et al. Racial and ethnic minority medical students' perceptions of and interest in careers in academic medicine. *Acad Med* 2013;88(9):1299-307.
- Odom KL, Roberts LM, Johnson RL, Cooper LA. Exploring obstacles to and opportunities for professional success among ethnic minority medical students. *Acad Med* 2007;82(2):146-53.
- Cantor JC, Bergeisen L, Baker LC. Effect of an intensive educational program for minority college students and recent graduates on the probability of acceptance to medical school. *JAMA* 1998;280(9):772-6.

23. Rubin R, Krueger RA. Focus groups: a practical guide for applied research, second edition. *Libr Inform Sci Res* 1996;18(2):191-2.
24. Tinto V. Dropout from higher education: a theoretical synthesis of recent research. *Review of Educational Research* 1975;45(1):89-125.
25. Ryan GW, Bernard HR. Techniques to identify themes. *Field Methods* 2003;15(1):85-109.
26. Denzin NK, Lincoln YS. *Handbook of qualitative research*. Thousand Oaks, CA: Sage Publications, 2000.
27. Borkan J. Immersion/crystallization. In: Crabtree B, Miller W, eds. *Doing qualitative research*. Thousand Oaks, CA: Sage Publications, 1999:179-94.
28. Balderas-Medina Anaya Y, del Rosario M, Doyle LH, Hayes-Bautista DE. Undocumented students pursuing medical education: the implications of deferred action for childhood arrivals (DACA). *Acad Med* 2014;89(12):1599-1602.
29. Hagedorn LS, Purnamasari AV. A realistic look at S'STEM and the role of community colleges. *Community College Review* 2012;40(2):145-64.
30. Vela MB, Kim KE, Tang H, Chin MH. Improving underrepresented minority medical student recruitment with health disparities curriculum. *J Gen Intern Med* 2010;25 Suppl 2:S82-85.
31. Kane MA, Beals C, Valeau EJ, Johnson MJ. Fostering success among traditionally underrepresented student groups: Hartnell College's approach to implementation of the Math, Engineering, and Science Achievement (MESA) program. *Community College Journal of Research and Practice* 2004;28(1):17-26.
32. Acosta D, Olsen P. Meeting the needs of regional minority groups: the University of Washington's programs to increase the American Indian and Alaskan native physician workforce. *Acad Med* 2006;81(10):863-70.