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ABSTRACT

The purpose of this study was to examine the impact of mentorship and advising as related to underrepresented minority (URM) students' experience and performance in medical school. URM students (n=23) from the University of Illinois at Chicago College of Medicine who matriculated in 1994 and 1995, and who were determined to be at risk of delay or withdrawal, were interviewed about the presence of mentor and advisor influences. The interviews examined student performance and curriculum evaluation, academic advisor efficacy and experience with mentoring, and students' personal history. Statistical analyses of the interview data revealed significant relationships between students' medical school experience and performance, whether or not they had mentors, and whom they chose as mentors. Students' evaluations of their advisors' efficacy was significantly dependent on whether or not they experienced any delays in their medical school training. Students' sense of integration within the university environment was also significantly related to their experiences with their advisors and mentors. (Contains 12 references.) (SM)

A QUANTITATIVE ASSESSMENT OF "AT RISK" STUDENTS AND MEDICAL SCHOOL PERFORMANCE: THE IMPORTANCE OF ADEQUATE ADVISING AND MENTORSHIP.

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Abstract

The purpose of this study was to examine the impact of mentorship and advising as related to underrepresented minority (URM) students' experience and performance in medical school. URM students from the University of Illinois at Chicago College of Medicine (UIC-COM) who matriculated in 1994 and 1995 and were determined to be at risk of delay or withdrawal were surveyed through questions about the presence of such influences. Statistical analyses of the survey data revealed significant relationships between a student's medical school experience and performance and whether or not they have a mentor and whom they choose as a mentor. A student's evaluation of their advisor's efficacy is significantly dependent on whether or not they experience any delays in their medical school training. A student's sense of integration within the university environment is also significantly related to their experience with their advisor and mentor.

Background

Within medical education literature mentoring or advisor efficacy is not typically discussed in the context of attrition, retention, and graduation, but rather in the context of student enrichment and similar topics. A few researchers have investigated the importance of mentoring and academic advising within the context of student performance and retention.[1,2] Some researchers have even focused their efforts on minority medical student performance and

retention.[3,4] Despite these efforts, the alarming rate of attrition for URM students necessitates the continued search into these and other areas that may offer possible solutions to this situation.

Previous research by Tekian, et al., has taken steps in this direction by examining the attrition and graduation rates of students at the University of Illinois at Chicago College of Medicine (UIC-COM) between the academic years 1993-1997.[5] From 1993-1997, a total of 895 students graduated from UIC-COM, of whom 166 (18.5%) were URMs. During this same period, 62 students withdrew from the college for an overall attrition rate of 6.5%. Of these 62 withdrawals, 32 were URM students. The total attrition rate for URM students was 16.2%, or well over twice the overall attrition rate of 6.5% and four times greater than the non-URM attrition rate of 4.0%. More importantly, of the 32 URM students who withdrew, 24 (75%) were dropped from UIC-COM for academic reasons. These data should be a clear indicator of the need for further work as to the possible causes of poor URM student performance and withdrawal.

This paper investigates the role of mentoring and advisor efficacy play in terms of their importance to "at risk" minority medical student performance. It is a pilot study meant to shed some light as well as guide attempts of future research. By examining qualitative differences between the medical school experiences of those students considered to be 'at-risk' from matriculation, we have to provide better role modeling strategies and mentoring programs that may help lower attrition rates and decrease incidences of academic difficulty for URM students during medical school.

Method

In this study we looked at a group of students designated as underrepresented minority (URM) students based on the AAMC classification, (which consists of African Americans,

American Indians, Mexican Americans, Hispanics, Cubans, and mainland Puerto Ricans), who matriculated to the University of Illinois at Chicago College of Medicine (UIC-COM) in 1994 and 1995 and who were considered at risk. "At risk" is defined as an increased likelihood of encountering academic difficulty while in medical school. Instances of "academic difficulty" would include the failure of one or more medical school courses or multiple attempts at passing either Step I or II of the United States Medical Licensing Examination (USMLE). Students with a cognitive index (CI) score equal to or less than 62 were considered in this study to be at risk. A CI score is assigned by the College's admissions committee and takes a student's MCAT score and GPA weighted by the competitiveness of the undergraduate institution into account. The "at risk" sample population from the entering classes of 1994 and 1995 was comprised of 99 students, 89 of whom were URMs. Students were also divided into two groups, no delay (ND) or delay/withdrawn (DW). This same dichotomy has been employed in our previous research and has been employed by other researchers in similar studies.[6] Students characterized as ND had no failures in any of their basic science courses and passed both Steps I and II of the USMLE whereas DW students had any number of failures in their basic science courses, or Steps I or II of the USMLE, or had withdrawn from the program. We randomly selected twenty students each from the "no delay" and the "delay/withdrawn" group as the sample groups to conduct our interviews. There were 10 no-delay and 13 delay/withdrawn students that agreed to be interviewed.

The interview guide consisted of three main sections asking questions that covered various aspects of individual student performance and curriculum evaluation, academic advisor efficacy and experience with mentoring, and personal history. Each section contained several questions and sub-questions asking students to evaluate such things as their first and second year

basic science courses; their overall undergraduate preparation for medical school; and their views of the efficacy of their academic advisors and the productivity of their sessions with them. We also asked questions regarding individual study habits, the nature of personal support systems, financial difficulties, other personal issues, and whether or not they had mentors and/or role models during the course of their medical school careers. The interviews were conducted in person allowing the flexibility to probe with more specific questions following open-ended responses. All questions, including open-ended responses, were coded as 0, not present, or 1, present. A chi-square test of goodness of fit was used to test for response bias. Significant relationships between individual questions were analyzed using the Pearson correlation coefficient (r_{xy}) test. Further relationships between student status and answers to selected questions regarding their study experience, advisor efficacy and mentoring experience were analyzed with a Fisher's exact test because of the small sample size.[7]

Results

No significant difference was found between the two groups as measured by the chi-square goodness of fit test. Whether a student had a role model or chose a medical professional as a mentor was also not dependent on their status as 'no delay or delay/withdrawn'. Whether a student belonged to a study group or participated in enrichment programs or experienced certain problems was not dependent on their status group as well. Whether a student's advisor had more time, was more pro-active to student needs, or had more knowledge of university policies was also not dependent on their status group. Satisfaction with their advisor, however, was dependent on their status group as shown by the Fisher exact test.

All reported Pearson correlation coefficients (r_{xy}) were significant at the $p<0.5$ or greater, (r_{xy}* $p<0.001$, r_{xy}** $p<0.0001$) (Table 1). Students who responded that 'their advisors were not helpful' had lower CI scores (r_{xy}= -0.41). Students who responded that, 'their advisors were moderately helpful', had higher CI scores (r_{xy}=0.73**), they did not feel their advisors were less pro-active towards them (r_{xy} = -0.47), and they reported no problems with the administration (r_{xy} = -0.44). Students who reported having a medical professional as their mentor had less delaying events (r_{xy}=-0.45), were characteristically described as "self-determined" (r_{xy}= 0.46), experienced fewer personal problems (r_{xy}= -0.46), and regularly received advice from their mentor (r_{xy} =0.46). In addition, students who reported having a UIC-COM faculty member as a mentor were characteristically described as "confident" (r_{xy} =0.62**). Students who had a business person as a mentor were more likely to report personal problems (r_{xy} = 0.48) and thought their advising sessions would have been more beneficial if their advisor had had more time (r_{xy} = 0.80**). Students who stated having a teacher or undergraduate professor as a mentor tended to feel certain lack of social integration within the medical university environment (r_{xy} = 0.50). Students who related having a family member as a mentor also felt some lack of integration within medical school (r_{xy}= 0.55**). Those who reported having a religious leader as a mentor reported increased financial difficulty (r_{xy} = 0.57**), had more work responsibilities (r_{xy} 0.45), and felt some lack of confidence (r_{xy} = 0.48). Students that felt their advisors should have more time for them often chose medical students as mentors (r_{xy}=0.67**), studied late at night (r_{xy}=0.42) and sought extra help from tutoring (r_{xy}= 0.58*). Those who believed their advisors should be more pro-active toward student needs more often reported administrative problems (r_{xy}= 68**) and personal problems (r_{xy}=48). Students who lacked confidence more

often experienced both problems with the administration (r_{xy}=0.42) and financial difficulty (r_{xy}= 0.46). Personal problems also tended to be related with a lack of social integration (r_{xy}=0.49).

In summary, not very helpful or insufficient advising was negatively correlated with CI score while helpful advising was positively correlated with CI score and negatively correlated with experiencing administrative problems. Among the complaints regarding academic advising, insufficient time was correlated with late night studying and having a fellow medical student or business professional as a mentor; most likely the result of overextended work hours or family obligations and insufficient time to immerse oneself within the medical or university environment. Having an advisor who was not proactive to student needs was positively correlated with experiencing personal illness or administrative problems, likely reflective of unsympathetic or inadequately trained advisors who were unable to deal with extra-ordinary student circumstances. Inadequate knowledge of university policies on the part of advisors, not surprisingly, was positively correlated with experiencing administrative problems and increased numbers of failed courses. Finally, the existence of a mentor within the medical profession was negatively correlated both with experiencing outside problems that interfere with medical school and experiencing failure within medical school. Conversely, mentorship outside the medical profession or no mentorship whatsoever was positively correlated with financial burden, hours worked, problems both within and outside of medical school, and a lack of social integration within the university.

Discussion

Mentoring and advising are topics being discussed more frequently within the medical education community today. However, the literature often frames this discussion in terms of prematriculant, summer support and enrichment programs.[8-10] Researchers seem to concur that medical students require much more than this limited version of "academic support" from their respective universities. True academic support encompasses more than academic enrichment or remediation programs. Academic support includes better classroom and institutional guidance, career counseling, adequate training of student advisors, and the provision and facilitation of opportunities for students to find mentors within their respective institutions. Earlier research points to the efficacy of such endeavours.[11] This study should also reinforce for administrators what many students already know first-hand. The administration and administrative processes have the ability to adversely affect the advising and mentoring process. Students who felt their advisors were not helpful or needed to be more pro-active towards their needs tended to experience some type of problem with the administration. Medical schools should be concerned about whether their administrative structure detracts even more from an already precarious mentoring and advising system.

This pilot study attempted to provide the impetus to move the discussion toward a more complete and satisfactory conversation regarding the true nature of "academic support" by interviewing students who were statistically equivalent prior to entering medical school, but who nevertheless performed quite differently academically throughout their medical school training. If differences in academic advising have a serious impact upon student performance, why has such little emphasis been placed on the role of academic advising by various medical institutions? Our results indicate that when advisors did not have sufficient time, students

gravitated toward other outlets, often encountering increased administrative problems. These students tended to choose people outside of medicine as their mentors, e.g. a businessperson or religious leader, and had more reliance on their study groups as a means of academic support. These students also tended to have lower CI scores to begin with, which already put them at a higher risk of experiencing academic difficulty. The negative trend of further isolating students from the medical community and affecting the acculturation process seems to be related to the time advisors spend with their students. Advisors need to be better prepared and equipped to handle students' needs and make themselves more available if we want to reverse the trend of isolating minority students from the medical community.

Mentoring and the existence of role models have a potentially positive impact upon student performance. Why then have institutions often neglected this seemingly powerful tool at their disposal? It is our hope that with continued research in this area, the potential beneficial role of mentoring can be shown to bring about more positive change in a student's academic performance and professional acculturation. As one doctor puts it, until mentoring, role modeling, and proper advising become more institutionalized, "Most of us (doctors and teachers) will have to be satisfied doing our best to guide our students' learning and careers. Real mentoring will remain an extraordinary privilege."[12]

Table 1: Significant Pearson Correlation Coefficients

		What would make advising sessions better?		Student CI Score	Types of problems experienced by students			Personal characteristics of students			Student experience of delaying events
		More time available for students	More proactive to student needs		Administration	Personal	Financial	Determination	Lack of confidence	Lack of social – integration within the university	
Student evaluation of advisors	Not helpful			-0.41		-0.44					
	Moderately helpful		-0.47	0.73**	-0.44						
Types of Mentors/ Counselors	Medical professional		0.45		0.49	-0.46		0.46			-0.45
	UIC-COM faculty							0.62**			
	Medical student	0.67**									
	Business person	0.80**				0.48					
	Teacher/ Professor									0.50	
	Religious leader						0.57**		0.48		
	Family member									0.55**	
Student study habits	Study late at night	0.42									
Types of study aids utilized by students	Tutoring	0.58*									
	Test-taking programs		0.46								
Types of Problems experienced by students	Administration		0.68**						0.42		
	Personal		0.48	0.46						0.49	
	Financial								0.46		
Student CI score								0.43			

Table One represents the Pearson correlation coefficients (r_{xy}) that are significant at the $p < 0.5$ level.
Correlation coefficients with a single (*) are significant at the $p<0.001$ and double (**) are significant at the $p< 0.0001$.

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