Contrasting Incoming Medical Students' Attitudes:
Dual Degree vs Traditional Tracks

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BACKGROUND AND OBJECTIVES: The Warren Alpert Medical School of Brown University (AMS) recently implemented a novel dual degree MD-ScM program in primary care and population medicine (PC-PM) that enrolls up to 24 of its nearly 144 yearly matriculants. The overarching goal of this track is to train medical students to become physician leaders who focus on issues in population medicine within primary care.

METHODS: We conducted a baseline assessment of the students enrolled in this parallel track in comparison to our traditional students to identify characteristics of and group differences between students in the PC-PM program and traditional students. Data was collected from first-year students matriculating in the 2015 and 2016 academic years (N=277) using portions of nine validated surveys with an emphasis on caring for the underserved and cultural competence, professionalism, working in interprofessional teams, tolerance of ambiguity, empathy, patient-provider interactions, and patient safety/quality improvement.

RESULTS: We identified slightly higher significant baseline differences on three scales in which the PC-PM students (n=38) were higher than those in the traditional track students (n=239). These measured cultural competency ($t[275]=-3.05$, $P=.003$), professionalism ($t[273]=-3.10$, $P=.002$), and attitudes toward working with underserved populations ($t[267]=2.31$, $P=.02$).

CONCLUSIONS: The higher differences for these three elements may be important to the success of the PC-PM program. We plan to track the growth of the PC-PM students as well as our traditional students through their 4 years of medical school to investigate growth and development throughout the academic career.

Medical education in the United States must continuously evolve to meet the rapidly changing needs of the American health care system. With the advent of the triple aim, health care professionals must strive to improve patient outcomes and patient experience while reducing per capita costs.[1] To meet these goals, students must now gain competence in a "third pillar of medical education," namely health system science, which encompasses knowledge, attitudes, and skills needed to function in the current health care environment, including interdisciplinary teamwork, leadership, and quality improvement.[2-5]

There will be an estimated primary care physician shortage of 33,000 by the year 2035, and the percentage of US graduates going into primary care continues to decline.[6,7] To begin to address these challenges, the Warren Alpert Medical School (AMS) of Brown University developed the dual-degree PC-PM program.[8] The goal of the PC-PM program is to increase the number of physicians in primary care by preparing this subset of students for leadership roles in health care ranging from primary care clinical service to research, education, and health policy. This program was founded at AMS due to our institutional history as a primary care medical school and obtaining a grant from the American Medical Association (AMA) as part of the Accelerating Change in Medical Education initiative.[8] A separate paper details the vision of the program, including the drive for the program to be innovative, scholarly, evidence-based, unique, and integrated with existing medical education.[8]

Students who wish to apply for the PC-PM program complete a secondary application geared toward health care reform during the standard medical school application timeline and are interviewed by program administrators to evaluate

From The Warren Alpert Medical School of Brown University, Providence, RI.

the fit between the student's goals and the goals of the program. Up to 24 students annually complete the unique 4-year curriculum that integrates a Master of Science in Population Medicine (ScM) with nine additional courses (integrated when possible) and clinical experiences for the medical degree.

To evaluate differences and to obtain a profile of our class as a whole, we surveyed the 2015 and 2016 matriculating classes of medical students at AMS using portions of nine validated questionnaires to characterize the attitudes, skills, and learning styles of students. The purpose of this study was to identify differences in attitudes between traditional-track students and those enrolled in the PC-PM program at baseline and assess whether any differences remain the same, grow, or narrow over the course of the program, to inform program development and evaluation.

Methods

First-year medical students from the 2015 and 2016 entering classes (N=277) completed portions of previously validated questionnaires (described elsewhere) that were chosen as a method to monitor outcomes of the PC-PM program (Table 1): The Medical Students' Attitudes Toward the Underserved (MSATU),[9,10] The Cultural Competency Scale,[11] the Medical Professionalism Questionnaire (MPQ),[12] Attitudes Toward Health Care Teams Scale,[13] Brudner Intolerance of Ambiguity scale,[14] Jefferson Scale of Physician Empathy,[15] and Patient-Practitioner Orientation Scale (PPOS).[16] Since we chose portions of validated surveys, we are not be able to directly compare our results with the same methodological rigor to existing literature. However, our goal was to compare our traditional-track student responses with those of the students in the PC-PM program, thus the methods were adequate for our use. The Brown University Institutional Review Board determined this study did not require review.

Analysis was conducted with the Statistical Package for the Social Sciences (IBM, SPSS, v.24). Mean scores on the MSATU subscales were combined in analyses to control for Type I error. Mean scores on the Cultural Competency Scale, MPQ, Attitudes Toward Interprofessional Health Care Teams, Tolerance of Ambiguity, the Jefferson Scale of Physician Empathy, and the PPOS were included in analyses. Quality improvement items were used to calculate two mean scores to indicate confidence in using scientific evidence and confidence in quality improvement methods. Student scores on each of the scales were delineated by PC-PM program versus traditional-track status to identify baseline differences. Independent sample t-tests were conducted across all variables to contrast traditional-track students versus PC-PM students.

Results

Of first-year students who participated in the survey (N=277), approximately half identified as female (50.5%, n=141) and as white (52.1%, n=146). Students also identified as Asian (23.6%, n=66), black or African-American (7.5%,n=21) and Hispanic/Latino (10.7%, n=30). Approximately half of our students entered our medical school through

Table 1: Questionnaire Items, Anchors, and Explanations

Questionnaire	Number of Items	Number of Anchors	Scoring Anchors	Construct Explanation
Medical Students' Attitudes Toward the Underserved	51	5	Strongly Disagree – Strongly Agree	Higher values represent more positive attitudes towards working with the underserved.
Cultural Competency Scale	6	5	Strongly Agree – Strongly Disagree	Lower values represent positive attitudes on cultural competency.
Medical Professionalism Questionnaire	9	5	Strongly Agree – Strongly Disagree	Lower values represent increased professional attitudes.
Attitudes Toward Interprofessional Health Care Teams	6	5	Strongly Agree – Strongly Disagree	Lower values represent positive attitudes.
Intolerance of Ambiguity	16	7	Strongly Disagree – Strongly Agree	Higher values indicate increased tolerance of ambiguity.
Jefferson Scale of Physician Empathy	20	7	Strongly Disagree – Strongly Agree	Higher values indicate increased levels of empathy.
Patient-Practitioner Orientation Scale	7	5	Strongly Agree – Strongly Disagree	Lower values represent patient-centered care.
Confidence in Applying Scientific Evidence	4	3	Not Confident – Very Confident	Higher values indicate increased confidence.
Confidence in Quality Improvement Methods	27	3	Not Confident – Very Confident	Higher values indicate increased confidence.

the standard route (57.1%, n=160), while a third (33.2%, n=93) entered through the Program in Liberal Medical Education (PLME) route. The PLME route is an 8-year program where high school students are accepted to Brown University to complete their Baccalaureate degree, and once finishing and meeting university requirements, are enrolled at AMS.

Mean questionnaire scores for all students are shown in Table 2. At baseline, PC-PM students scores differed significantly on three of the nine measures (Table 3).

Conclusions

Results from portions of nine validated questionnaires showed students enrolled in the PC-PM program demonstrated significantly different scores on items from the Cultural Competency Scale, MSA-TU, and the MPQ. This translates to increased positive attitudes toward

Table 2: First-Year Medical Students' Questionnaire Responses

Questionnaire	All Student Responses	
	Mean	SD
Medical Students' Attitudes Toward the Underserved (Scale: 1-5)	4.05	.36
Cultural Competency Scale (Scale: 1-5)	2.60	.39
Medical Professionalism Questionnaire (Scale: 1-5)	1.48	.40
Attitudes Toward Interprofessional Health Care Teams (Scale: 1-5)	1.80	.57
Intolerance of Ambiguity (Scale: 1-7)	4.58	.46
Jefferson Scale of Physician Empathy (Scale: 1-7)	5.81	.65
Patient-Practitioner Orientation Scale (Scale: 1-5)	4.21	.48
Confidence in Applying Scientific Evidence (Scale: 1-3)	2.49	.88
Confidence in Quality Improvement Methods (Scale: 1-3)	2.41	.81

Table 3: Score Comparison of Students Enrolled in the PC-PM Program vs Traditional Students

Questionnaire	PC-PM Students (N=38)		Traditional Students (N=239)		Mean Difference Statistics		
	Mean	SD	Mean	SD	Mean Difference	P	df
Medical Students' Attitudes Toward the Underserved* (Scale: 1-5)	4.18	.29	4.03	.37	0.15	.02	141
Cultural Competency Scale* (Scale: 1-5)	2.43	.41	2.62	.37	-0.19	.003	141
Medical Professionalism Questionnaire* (Scale: 1-5)	1.30	.30	1.51	.41	-0.21	.002	141
Attitudes Toward Interprofessional Health Care Teams (Scale: 1-5)	1.63	.49	1.82	.57	-0.19	ns	
Intolerance of Ambiguity (Scale: 1-7)	4.70	.43	4.56	.46	0.14	ns	
Jefferson Scale of Physician Empathy (Scale: 1-7)	5.92	.62	5.80	.65	0.12	ns	
Patient-Practitioner Orientation Scale (Scale: 1-5)	4.31	.37	4.19	.49	0.12	ns	
Confidence in Applying Scientific Evidence (Scale: 1-3)	2.47	.78	2.50	.90	-0.03	ns	
Confidence in Quality Improvement Methods (Scale: 1-3)	2.51	.71	2.40	.83	0.11	ns	

Using a $P<.05$ criterion, we found PC-PM students had slightly more positive attitude scores on three of the nine measures (marked with an asterisk). Nonsignificant findings are marked with ns.

cultural competency, higher positive attitudes toward working with underserved populations, and increased professionalism. This is not surprising, given that students enrolled in the program were selected based on an expressed interest in careers in population health and held strong population health-related values, and may bring additional life experiences prior to enrolling in medical school that facilitate increased cultural competence and professionalism. Existing literature on personality factors and specialty choice revealed family practitioners (ie, physicians in primary care) scored higher on a personality measure of abstractedness (eg, creativity) than surgeons and anesthesiologists.[17] Research has shown that personality tests completed by first-year medical students can be used to predict entrance to person versus technique-oriented specialization, but that values did not significantly predict type of specialty, though the authors call for more research in this area.[18]

The implications for increased scores reported by the PC-PM students indicates a need to monitor changes moving forward, to determine whether the scores continue to increase, or remain stable when compared to traditional track students. We also plan to track students as alumni to determine where and in what areas students practice (eg, clinical practice, research, health policy).

We used portions of nine validated surveys to reduce response fatigue, therefore our results cannot be directly compared to existing literature and do not have the same reliability and validity values as the original instrument. Earning the dual degree through completing the thesis is a required portion of the program. It would be interesting to see how the curriculum alone impacts students' goals and career choices. Additionally, the responses provided here were derived from students at a private medical school in the northeastern United States, limiting generalizability to other institutions.

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