PRiMER
peer-reviewed reports in medical education research
research brief

Medical Students' Interest in Serving Medically Underserved Populations: A Follow-Up Study

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PRiMER. 2026;10:25.

Published: 07/21/2026 | DOI:10.22454/PRiMER.2026.383207

Abstract

Introduction: Despite exposure to vulnerable populations, many medical students report feeling inadequately prepared to advocate for these communities. Therefore, it is critical to understand what drives students to engage with the underserved. In this study, we build on prior work to examine whether student characteristics and self-reported engagement experiences are associated with medical students' motivation to work with medically underserved populations, and how these factors evolve.

Methods: This cross-sectional study used multiple instruments to assess medical students at UT Southwestern Medical School across three time points in medical school. Surveys included the Medical Student Attitudes Toward the Underserved (MSATU), Interpersonal Reactivity Index (IRI), and Interprofessional Attitudes Survey (IPAS), along with demographic data, academic performance, service-learning activities, and future career plans. We categorized specialties into primary care versus non–primary care. We used bivariate correlations and group comparisons to examine differences in MSATU, empathy, leadership, teamwork, and community-centeredness.

Results: Most participants were female (61.2%) and interested in non–primary care specialties (61.8%). Interest in primary care was positively associated with higher MSATU total scores, Empathy, IPAS: teamwork, and IPAS: community, while leadership was not associated with primary care interest. MSATU total scores were positively correlated with empathy, IPAS: teamwork, IPAS: community, and leadership.

Conclusions: As demonstrated in our prior work, the MSATU, IRI, and IPAS showed strong associations among medical students, likely reflecting shared protective factors. In this expanded cohort, the association between empathy, community-centeredness, and interest in primary care may be explained by the specialty's emphasis on community engagement and longitudinal patient relationships.

Introduction

As the needs of medically underserved populations (MUPs) outstrip the available physician workforce, prior studies demonstrate that educational curricula can improve medical students' short-term attitudes toward the underserved.[1,2] A 2021 systematic review demonstrated that medical students' motivations toward working with MUPs consistently declined as they progressed through medical schools, with other studies

showing protective factors like global health experiences, community health electives, and female gender that acted as buffers to decreasing medical student attitudes toward working with MUPs.[3] Similarly, in our prior work, we found higher Medical Student Attitudes Toward the Underserved (MSATU) scores among students who identified as female, demonstrated higher empathy, teamwork, and community-centeredness, and who planned to specialize in primary care.[4] Additional research shows that participation in student-run free clinics (SRFCs), which connect patients with social services and offer an opportunity for students to care for individuals with complex medical and social needs, as well as early clinical and preclinical exposure to underserved communities, positively influenced student empathy and attitudes.[1,3,5] However, despite frequent exposure to medically underserved and vulnerable populations, many medical students report feeling inadequately prepared to advocate effectively for these communities.[6]

Our study aimed to investigate whether certain experiences and personal characteristics including empathy, community-centeredness, and prioritization of teamwork, act as protective factors that bolster medical students' motivations to work with MUPs as they progress through their education. Building on our preliminary work, which explored these factors as potential buffers and their evolution over time, the current study completes a full longitudinal cycle, with three time points representing key stages in medical student education.

Methods

The study is cross-sectional, utilizing multiple survey tools to assess medical students at the University of Texas at Southwestern Medical School (UTSW). The survey tools were sent to each cohort of students at three time points during medical school and included the Medical Student Attitudes Toward the Underserved (MSATU), the Interpersonal Reactivity Index (IRI), and the Interprofessional Attitudes Survey (IPAS). The MSATU measures attitudes towards working with MUPs. The IRI is a measure of empathy, and the IPAS measures interprofessional strengths and teamwork. Interprofessional orientation and teamwork were operationalized as indicators of collaborative and community-centered practice, consistent with the domains measured by the instrument. We chose three time points to represent three major steps in medical student education: the first year of medical school (First-Years), the second year of medical school prior to starting clinical rotations (Preclinical), and the fourth year of medical school after finishing core rotations (Postclinical), for a total of 759. For the present analysis, we aggregated and treated the data as cross-sectional. Multiple responses by the same participants across time points were systematically identified and removed prior to analysis. We collected demographic data, self-reported grades, service-learning activities, and future career plans, including specialties. However, we did not analyze or report these variables separately; experiential aspects relevant to service orientation and teamwork have been captured through the MSATU composite score.

Surveys were distributed through REDCap using individualized links with a $10 gift card incentive for survey completion. The study was approved by the UTSW Institutional Review Board (IRB).

All statistical analyses were carried out using SPSS software version 29 (IBM Corp). Participants were given 13 specialty options to choose from and asked to report their desired specialty upon graduation. We identified specialties associated with primary care to include family medicine, general internal medicine, general pediatrics, and obstetrics and gynecology (OB/GYN), and created a dichotomous “Primary Care” variable comparing those who identified a primary care specialty versus those who did not identify a primary care specialty. We carried out bivariate correlations to examine differences in MSATU, empathy, leadership, IPAS: Teamwork, and IPAS: Community. We compared groups on the MSATU, empathy, leadership, IPAS: Teamwork, and IPAS: Community using an Analysis of Covariance (ANCOVA) test with a dichotomous age

Table 1. Demographics and Primary Variables

Variable	N (%)/M (SD)
Total sample size	**759 (100)**
Primary care	
Primary care	242 (38.20)
Non-primary care	391 (61.80)
Medical student cohorts	
First-years	199 (30.50)
Preclinical	214 (32.8)
Postclinical	239 (36.7)
Gender	
Male	249 (38.8)
Female	393 (61.2)
Age (years)	
18–19	1 (0.2)
20–29	627 (95.1)
30–39	30 (4.6)
40–49	1 (0.2)
Race	
White	323 (46.4)
African American	52 (7.5)
American Indian or Alaskan Native	12 (1.7)
Asian or Pacific Islander	290 (41.7)
Other	19 (2.7)
Ethnicity	
Hispanic	101 (15.3)
Non-Hispanic	558 (84.7)
MSATU Total	79.92 (12.69)
Empathy	4.06 (0.55)
IPAS: Teamwork	4.20 (0.63)
IPAS: Community	4.43 (0.52)
Leadership total	**3.36 (0.49)**

Note: Individual categories may not add up to the Total Sample Size. Participants could choose to not complete questions creating missing data. Participants with missing cases were list-wise deleted for all analyses.
Abbreviations: IPAS, Interprofessional Attitudes Survey; MSATU, Medical Student Attitudes Toward the Underserved survey

variable (18–29 years vs 30 and older), ethnicity (Hispanic vs non-Hispanic), race (White vs non-White), sex (male vs female), and the dichotomous primary care variable serving as covariates. A multiple regression analysis with MSATU scores serving as the dependent variable with empathy; leadership; IPAS: Teamwork;

the Primary Care variable; and IPAS: Community scores serving as independent variables. We added age, sex, ethnicity, and race to the multiple regression model to serve as control variables.

We deleted participants with missing data list-wise from the analyses.

Results

Demographic characteristics and means of the primary variable used in this study are shown in Table 1. Most of the sample was female (61.2%) between the ages of 20 and 29 years (95.1%) and were non-Hispanic (84.7%). Most of the sample reported an interest in a non-primary care specialty (61.8%).

Table 2 provides bivariate correlations with primary variables. Stating that one desired to be in a primary care specialty was positively associated with higher MSATU total scores (r = 0.129, P = 0.001), empathy (r = 0.125, P = 0.002), IPAS: Teamwork (r = 0.122, P = 0.002), and IPAS: Community (r = 0.168, P<0.001). Leadership was not associated with the primary care specialty. The MSATU total score was positively associated with empathy (r = 0.436, P<0.001), IPAS: Teamwork (r = 0.404, P<0.001), IPAS: Community (r = 0.521, P<0.001), and leadership (r = 0.142, P<0.001).

Table 2. Bivariate Correlations of Primary Variables

	1	2	3	4	5	6
1. Primary care	-	-	-	-	-	-
2. MSATU Total	0.129**	-	-	-	-	-
3. Empathy	0.125**	0.436***	-	-	-	-
4. IPAS: Teamwork	0.122**	0.404***	0.332***	-	-	-
5. IPAS: Community	0.168***	0.521***	0.413***	0.432***	-	-
6. Leadership Total	0.032	0.142***	0.249***	0.238***	0.245***	-

Note: * P<0.05, ** P<0.01, *** P<0.001
Abbreviations: IPAS , Interprofessional Attitudes Survey; MSATU, Medical Student Attitudes Toward the Underserved survey

Table 3. Multiple Regression Analysis Predicting MSATU Scores

Predictor	β	*T* statistic	*P* value
Total Empathy	0.238	6.632	0.001***
IPAS: Teamwork	0.128	3.506	<0.001***
IPAS: Community	0.345	9.382	<0.001
Primary care	-0.015	-0.441	0.659
Sex	0.016	0.491	0.624
Age	-0.185	-5.688	<0.001***
Ethnicity	0.104	3.274	0.001**
Race	-0.100	2.737	0.006**
Constant	13.948	3.203	0.001**

Note: Overall Model: (F[9, 615] = 46.37, R^2 = 0.408, $R^2_{Adjusted}$ = 0.399, P<0.001).
* P<0.05, ** P<0.01, *** P<0.001
Abbreviations: IPAS, Interprofessional Attitudes Survey; MSATU, Medical Student Attitudes Toward the Underserved survey

The multiple regression model results can be found in Table 3. Empathy IPAS: Teamwork), and IPAS: Community were all significant predictors of MSATU scores after controlling for the other variables in the model. As empathy, IPAS: Teamwork, and IPAS: Community scores increased, so did MSATU scores after controlling for the other variables in the model. Total teamwork and the primary care specialty were nonsignificant predictors of MSATU scores (P>0.05). In the ANCOVA analysis, we found a significant main effect for medical student year when examining IPAS: Teamwork. A Bonferroni-corrected pairwise comparison of medical student year found that first-year medical students had higher IPAS: Teamwork means when compared to postclinical students (M_{diff} = 0.349, P<0.001). Additionally, preclinical students had higher IPAS: Teamwork means when compared to postclinical students (M_{diff} = 0.255, P<0.001). A separate ANCOVA examining the Total Leadership scores found a significant main effect of medical students. A Bonferroni-corrected pairwise comparison of medical student year found that preclinical medical students had lower total teamwork means when compared to postclinical students (M_{diff} = -0.135, P = 0.012). We found no significant main effects when examining the MSATU, empathy, and IPAS: Community, and dependent variables.

Conclusion

As demonstrated in previous work, the MSATU, IRI, and IPAS tools show strong associations among medical students, likely due to shared protective factors. In this expanded cohort, the multivariable analyses demonstrated interprofessional teamwork attitudes, and particularly community-centeredness independently predicted higher MSATU scores after controlling for demographic characteristics and other variables. Interest in primary care was not independently associated with MSATU scores in the multiple regression analysis, and it may be explained by the specialty's strong emphasis on community engagement and longitudinal relationships with patients. Results from the MSATU across medical education have shown consistent decreases in multiple settings.[1,3,5] Similarly, a large body of work has demonstrated decreasing empathy scores over time for medical students.[2,6-8] The IPAS showed a decrease in teamwork metrics over time. A possible explanation for this is fourth-year students' focus on their individual career paths and a decrease in interprofessional education curriculum in the latter half of medical school. The pattern of teamwork metrics on the IPAS may show that while the first year of medical school decreases-ignite these attributes. The observed patterns in IPAS teamwork metrics are presented as interpretive and hypothesis generating, as the study was not designed to directly test changes across stages of training. Unexpectedly, teamwork decreased when compared to postclinical students, but leadership scores were higher for postclinical students when compared to preclinical students. These results may highlight that a unique quality of medical school education wherein early medical student education emphasizes collaboration amongst students, but as students' progress, more independent leadership qualities are taught. More research is needed to examine how teamwork and leadership skills differ as medical students progress in their training.

Cross sectional study, based on self-reported survey measures, should be interpreted with appropriate caution, as these design features may limit causal inference and generalizability, while still offering useful, hypothesis-generating insights. Although multivariable analyses controlled for several demographic and educational factors, unmeasured confounders, such as prior experiences with underserved populations, educational exposures, mentorship, and personal background factors, may have influenced the associations. Future research should focus on identifying factors that motivate medical students to work with the medically underserved, within and beyond primary care. Moreover, developing interventions that could reinforce these factors, including enhancing empathy and community connectedness, may help address gaps in care that the underserved populations face.

Support

Financial support for this study was provided by the University of Texas Southwestern Medical Center Department of Family and Community Medicine.

Presentations

The preliminary results of this study were presented in poster format at the 2024 North American Primary Care Research Group (NAPCRG) Annual Conference, November 20, 2024, Québec City, Quebec, Canada.

Conflicts of Interest

The authors have no conflicts of interest to disclose.

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