Journal of Student-Run Clinics
Original Study

Impact of Student-Run Free Clinic Participation on Medical Student Attitudes Towards the Underserved: A Mixed-Methods Approach

Michael Enich[1]; Meagan Hawes, MD, MSPH[2]; Paul Lavadera, MD[3]; Karen Wei-Ru Lin, MD[4]

[1]Rutgers, The State University of New Jersey Robert Wood Johnson Medical School, New Brunswick, New Jersey, USA
[2]North Colorado Family Medicine Residency, Greely, Colorado, USA
[3]Kings County Hospital Center, State University of New York Downstate, Brooklyn, New York, USA
[4]Department of Family Medicine and Community Health, Rutgers, The State University of New Jersey Robert Wood Johnson Medical School, New Brunswick, New Jersey, USA

Corresponding Author: Michael Enich email: me412@rwjms.rutgers.edu

Published: December 6, 2021

Abstract

Background: Student-run free clinics provide an opportunity to shape medical student practices with and attitudes towards the medically underserved. Previous literature has shown mixed results on how student attitudes change over the course of medical education. The purpose of this mixed-method study is to determine the effect that participation in a student-run free clinic has on medical student attitudes towards the underserved as compared to attitudes of non-participating students.
Methods: The validated Medical Attitudes Towards the Underserved (MSATU) survey was administered in cross-sectional study to student participants in a student-run free clinic and to non-participating medical students (n = 122). Additionally, first and fourth year participant students were interviewed via semi-structured interviews about results.
Results: There was no statistically significant difference in overall MSATU scores between participant and non-participant medical students using Mann Whitney tests. In sub-score analyses, Mann Whitney tests demonstrated significantly higher scores among participants in the total services score (U = 1344.0, df = 115, p = 0.013) and the expensive procedures services sub-score (U = 1401.0, df = 115, p = 0.019). Interviews revealed that positive attitudes towards the underserved are not specific to student-run free clinic participants. Participants did not describe changes in their attitude from clinic participation, believing all medical students had a baseline positive attitude towards the underserved. They did, however, highlight that witnessing the reality of these patients influenced their perspective and future practice.
Conclusions: There were limited significant differences in MSATU survey scores between participant and non-participant students. Interview results suggest that the survey tool was unable to capture changes in the perspectives of participant medical students or the changes in their projected practices but that, participation in a student-run free clinic had an overall positive effect on understanding of the barriers to care and empathy towards the underserved.

Introduction

Despite the advancements over the past decades, health disparities continue to persist for particular groups of people including racial and ethnic minorities, women, sexual minorities, people experiencing homelessness, and other marginalized communities.[1] This is especially true for individuals who exist at the intersections of those identities.[2] More and more research points towards the importance of addressing social needs as integral to righting health disparities.[3] "Medically underserved" has become a broad reference to individuals with low socioeconomic status, ra-

cial minorities, chronically ill, homeless, and low-income populations who lack or have insufficient insurance coverage.[4,5]

Student-run free clinics (SRFCs) provide medical care for people who would otherwise go without, including local homeless populations.[6,7] SRFCs often connect patients with social services[8] and provide an opportunity for students to engage in the care of people who have compounding medical and social needs.[9] SRFCs shape medical students' self-reported attitudes and self-efficacy in being able to provide services for vulnerable people.[10]

SRFCs are also integral to medical education. They are cited as places where students can hone clinical skills and enhance collaboration through direct experience.[11] This ultimately contributes to the understanding of their roles on medical teams.[12-13] SRFCs also encourage an appreciation for the complex medical system that surrounds the medically underserved.[9]

Previous research by Crandall et al. documents a decline in positive attitudes, defined as a set of emotions, practices, or behaviors, toward the underserved when comparing attitudes of fourth-year medical students to those of first-year peers.[10] This decline is in line with the documented erosion of empathy that has been noted by several researchers to occur over the four years of medical school.[14-18] Other studies examining long-term behaviors of students suggest that SRFC participation encourages people to orient their clinical practice towards underserved patients or to encourage behaviors that promote care for the underserved, such as donating to local charities or holding more accessible clinic hours.[10,19]

The purpose of this mixed-methods study is to examine how participation in an SRFC affects medical students' attitudes towards the underserved using a validated survey tool as well as qualitative in-depth interviews. The goal was to elucidate a potential difference between participant and non-participant students and explore the role of SRFs in shaping these attitudes.

Methods

Study Design

During the 2019 academic year, we conducted a cross-sectional study of first through fourth year medical students at Rutgers Robert Wood Johnson Medical School using the validated Medical Student Attitudes Towards the Underserved (MSATU) survey tool to examine medical student attitudes towards the underserved.[6,20] Students participating in Rutgers, The State University of New Jersey's Homeless and Indigent Populations Health Outreach Project Promise Clinic (PC) (the SRFC) and non-participating peers were both asked to complete an electronic, voluntary, anonymous MSATU assessment via Qualtrics (2019, Qualtrics, Provo, Utah). All 185 PC student volunteers as well as the 482 non-participating medical students were invited to complete the survey via email, for respective response rates of 35.1% and 11.8%. Inclusion criteria included all medical students at Robert Wood Johnson Medical School; students were invited to complete the survey and were sorted to their respective groups after survey completion.

Additionally, our study utilized in-depth qualitative interviews to explore if and how attitudes towards the medically underserved changed as part of their participation in PC, with special attention to what participants could contribute to understanding of the MSATU survey results. In order to explore the research question of how participation in SRFCs shapes student attitudes, the participants recruited for the interviews were medical students who volunteered at PC. Interviewees were recruited over email via purposeful mixed stratified and network sampling from research teams' close contacts (Michael Enich [ME] & Meagan Hawes [MH], authors). Sampling was stratified in order to ensure a distribution of PC roles, including students participating in direct patient care and students providing operational support across class years. All data collection and analysis was conducted per approved protocol in accordance with Rutgers University Institutional Review Board.

Survey Instrument

The MSATU assessment is a validated 60-item questionnaire comprised of 5 sections. The reliability and validity of this survey tool are reported elsewhere.[7,18] Briefly, the original study showed content (as determined by original multiprofessional study team), construct (demonstrated by a

rigorous factor analysis of factor loading scores greater than 0.40 and strong internal consistency of 0.50 or greater) as well as translational construct validity (when compared two other validated scales).[18] Sample items from the questionnaire are shown below (Table 1). The first section, the "Attitude Score", measures attitudes towards access to health care services for underserved populations. It consists of 23 5-point Likert scale questions divided into 2 sub-sections: one regarding professional responsibility and another regarding societal expectations. The second section, the "Services Score", consists of 14 5-point Likert scale questions measuring what health care services students believe patients should have access to regardless of their ability to pay. It is also divided into two sub-sections: basic services and expensive procedures.

Interview Guide & Sample

A total of 8 students involved in PC participated in the post-survey interview. Two students provided only operational support, two provided only direct patient care, and four students held both roles. Four were first year medical students (M1s) and four were fourth year medical students (M4s). Four were male and four were female. Originally, 8 students were recruited in order to meet this originally-intended stratification; after 5 interviews, thematic saturation (or the point at which the interviews revealed no new themes) had been reached but research team completed all the interviews in order to ensure saturation.

One author (ME) conducted eight in-depth interviews over video conferencing platform with PC participants that lasted 40 to 60 minutes. Questions were asked via semi-structured, open-ended interviews. Interview guide is available in Table 2.

Data Analysis

Survey data was entered into Stata IC (version 16, StataCorp LLC, College Station, Texas). All surveys that were started but where sections were not completed (n = 32) were dropped from analysis. MSATU total score, and all sub-scores, were calculated using survey items consistent with prior MSATU analyses.[7,8] Skewness and kurtosis tests for normality showed that our data was not normally distributed, therefore Mann Whitney tests were used to analyze the MSATU mean scores between the cohorts of PC participants and non-participants for each of the MSATU total and sub-scores ($p < 0.05$).

Thematic analysis was used by two members of study team (ME & MH) to identify, analyze, and report overall patterns within qualitative interview recordings. Sensitizing concepts were originally based on interview questions and deductive cross-case analysis was utilized to code participant responses. Subsequent inductive analysis was performed to search for overarching themes.[21]

Results

Quantitative Findings

MSATU surveys were completed by 122 students: 65 PC participants and 57 non-participants. Demographics were compared between the two groups and no baseline differences were observed (Table 3). Internal consistency testing for the MSATU survey among our sample revealed a Cronbach's alpha of 0.95, suggesting good internal consistency.

Results of tests between participant and non-participant students are displayed in Table 4. When comparing mean MSATU total scores, statistically significant differences were identified between PC participants and non-participating peers for the total services score ($U = 1344.0$, $df = 115$, $p = 0.013$) and the expensive procedures services sub-score ($U = 1401.0$ 0.44, $df = 115$, $p = 0.019$). Other analyses were not significant.

Qualitative Findings

<u>Positive attitudes towards the underserved are not specific to SRFCs</u>

Students did not have a unifying definition of who the "underserved' were. When students were asked about reasons why there were no differences in attitudes between PC participants and non-participating peers they were quick to point out a sense of obligation to the underserved among all medical students; they believed all students felt positively around providing access to quality care for underserved individuals.

All but two participants spoke about the context of the school – as the land grand institution of

Table 1. Selected items from the MSATU assessment

Examples of 5-Point Likert Scale MSATU Questions
(1= Strongly Disagree; 2= Disagree; 3= Undecided; 4= Agree; 5= Strongly Agree)
Attitude Score
Professional Responsibility
• I personally feel responsible for providing care to the needy.
• All medical students should be involved in community health efforts.
Societal Expectations
• Medical care should be provided without charge for those who cannot pay.
• Private charitable organizations should provide facilities for medical care of the needy.
Services Score
I feel that all individuals should have access to _____ regardless of their ability to pay.
Basic Services
• Childhood immunizations
• Visits to a physician's office for routine health maintenance
Expensive Procedures
• Heart transplants
• Liver transplants

Table 2. Interview Guide Questions

Semi-Structured Interview Guide
Thank you for being willing to participate in this interview. I'm going to ask you some questions about your participation in Promise Clinic. At orientation this year you were invited to complete the Medical Student Attitudes Towards the Underserved (MSATU) survey. These questions are meant to explore some of the results from that survey.
1. Who would you consider "the underserved"?
2. If this person wanted to receive medical care, what does their process of accessing care look like?
3. Tell me about your experiences working with the underserved prior to being a part of Promise Clinic.
4. How has participating in Promise Clinic shaped your attitudes towards the underserved?
5. How has your understanding of that experience changed since being a part of Promise Clinic?
In the MSATU survey we did at Promise Clinic Orientation, there were two scales. One looked at personal responsibility and societal expectations that medical students should have towards the underserved. The other looked at the underserved and whether they should be given basic or expensive services at no cost. In our analysis, there was no statistically significant differences in total score between Promise Clinic participants and non-Promise Clinic participants.
6. Why do you think that might be?
Can you think of any particularly influential experiences from your time at Promise Clinic?

Table 3. Study participant demographics among Promise Clinic participants and non-participating medical school peers.

Characteristic	Promise Clinic Participants n=65 (%)	Non-Participants n=57 (%)	P-value
Age, mean in years	26.0	25.3	0.667
Gender			
Male	23 (35)	14 (25)	0.194
Female	42 (65)	43 (75)	
Race			
White	37 (57)	30 (53)	0.194
Black	1 (2)	3 (5)	
Asian	19 (30)	14 (25)	
Multiracial	6 (9)	5 (9)	
Other	2 (3)	4 (7)	
Hispanic Ethnicity	7 (11)	4 (7)	0.469
Medical School Year			
M1	8 (12)	9 (16)	0.815
M2	14 (22)	9 (16)	
M3	19 (30)	15 (26)	
M4	17 (26)	18 (32)	
MD/PhD	3 (4)	1 (2)	
Clinical Research Year	4 (6)	5 (9)	

M1: first year medical student, M2: second year medical student, M3: third year medical student, M4: fourth year medical student.

Table 4. Comparison of MSATU scores by Promise Clinic participation, gender, and medical school class year.

	Promise Clinic Participants			Non-Participants					
	n	Mean Score	SD	n	Mean Score	SD	Test Statistic (U)	df	p-value
MSATU Total Score	61	49.6	9.28	56	50.4	10.7	1549.5	115	0.387
Attitude Score	62	50.3	10.0	57	49.7	10.3	1676.0	117	0.628
Professional Responsibility	65	50.3	10.0	57	49.6	10.0	1757.0	120	0.623
Societal Expectations	62	50.3	9.25	57	49.8	10.8	1744.0	117	0.902
Services Score*	64	48.8	9.23	56	51.3	10.7	1344.0	118	0.013
Basic Services	64	49.7	8.36	57	50.3	11.6	1515.0	119	0.062
Expensive Procedures*	65	51.7	9.75	56	48.5	10.1	1401.0	119	0.019

*Statistically significant results denoted with *.*
MSATU: Medical Attitudes Towards the Underserved; SD: standard deviation; df: degrees of freedom

New Jersey, this medical school serves a specific role in addressing community health. Multiple students specifically referenced this public charter as important to their decision to enroll. As stated by one participant:

> *"I think part of it has to do with the mission of the school and how they select students. One of the reasons that I chose to come to [this school] and why I was passionate about the school was because one of the pillars of their mission is community health and so for me having worked in community health and that being an area of health and healthcare I'm interested in I just felt as though it was a really great match." (#3)*

Over half suggested that this means "students very much seem to be on the same page with the underserved population" because "admissions did a really good job of selecting people." (#1)

<u>PC participants did not report changes in their attitude from SRFC participation</u>

All of the interview participants reported experiences working with people who were underserved (by their own conception of the definition) prior to starting at medical school. The degree of involvement in mentioned activities ranged from periodic to regular involvement; over half of the participants mentioned previous service in healthcare that informed these positive beliefs.

When participants articulated any change in their attitudes, they spoke of a positive reinforcement of orientation towards the underserved. "I think it's only further reinforced my feeling that we need to do more as a medical system for this population" (#5) one participant expressed. Beyond this, students cited PC as a "grounding experience" (#6). "I'd say more, if anything, it almost liked sated me more in a like — wow, it's a very intimate level of being able to help someone like that" (#2) one participant said. One participant cited PC as a means of furthering their attitudes developed from a previous service experience:

> "*So I think that PC has been a really big motivator to remind me and keep me grounded as to why I came to medical school. In moments that M1 got really hard or I felt imposter syndrome I would think 'Okay, this is why I'm here. This is why I'm drawn to medical school… Something that I had in mind was that I want to work with underserved communities and help with advocacy as well. I want to use my experience with patients and such to further healthcare services.'" (#8)*

<u>Witnessing the reality & its effect on medical practice</u>

After describing no changes in their own understanding of what their attitudes were, students would go on to describe witnessing the challenging reality of providing medical care for the underserved. Student participants came to realize there are very tangible obstacles to receiving medical care. Over half could cite a specific experience of being with a patient facing a barrier to care:

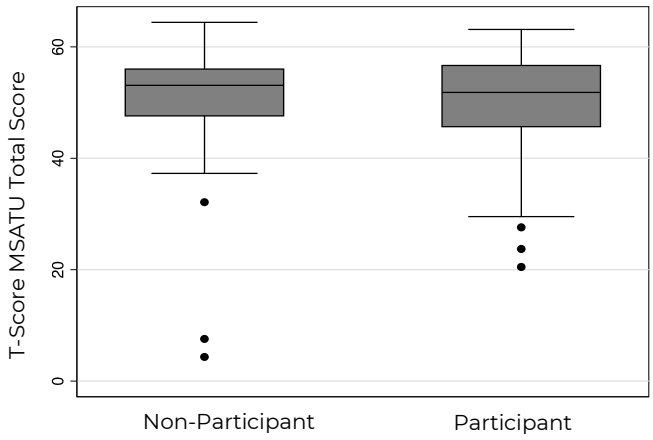
> *"We were trying to get our patient to apply for Charity Care… They have to present certain documentation and letters from the state and the government and things of that nature… I just remember it's a lot. It's a lot of paperwork, a lot of documentation, a lot of steps." (#1)*

Participants endorsed the idea that being able to address physical health meant having one more skill or "tool in the toolbox" to "address a very specialized set of needs" (#7). One student spoke to how hearing directly from a patient shaped his understanding of that patients' needs:

> *"You feel for them but when you talk to these people and you realize what their day to day lives are… when you talk to someone and he tells me 'Hey, I sleep in my car every night and that's what's causing my leg cramps' or 'Hey, it's the winter and I can't keep my car on all night because I can't afford the gas so I drink alcohol for that reason' it connects the dots that maybe you knew about but you think about in a very different way. It really puts a face to it… it teaches us we need to be treating the patient and not the disease." (#4)*

Multiple participants talked about how this trusting relationship combined with the responsibility of clinical care was different than previous service experiences. Together, this resulted in the

Figure 1. MSATU Total Score by year in Promise Clinic participation



Interquartile range depicted by box, with line drawn indicating median score and whiskers extending to the 5th and 95th percentile scores. Outlying scores shown by individual data points.
MSATU: Medical Student Attitudes Toward the Underserved

student having to learn new skills in order to manage this complex care:

> *"I think PC gives you a unique view into the life of an underserved patient... I think because in PC you feel responsible for your patient. It's your patient. And sometimes people don't even have that experience on the inpatient wards. They take care of patients but sometimes it doesn't feel the same — there's not that sense of continuity... everyone has a very special commitment to doing something different at PC." (#2)*

Discussion

Exposure to underserved populations via participation in PC did not significantly change student attitudes towards the underserved as measured by the MSATU assessment when compared to non-participating peers. In sub-analyses, there were significant differences in expensive procedure scores, which drove the significant differences in overarching services score. Qualitative interviews revealed the lack of significant difference in total attitude score could be because there was a heterogeneous understanding amongst students as to who comprised an underserved population.

This study contributes to the body of literature showing how medical education has mixed effects on attitude scores,[7,8,18] and potentially erodes student empathy scores over the course of degree completion.[16,17] All the while, SRFC-specific studies suggests that participation presents a unique opportunity for medical students to serve their community,[20,22] with potential long-term effects on their career trajectory.[19]

Studies examining medical student attitudes have evolved to draw a distinction between positive attitudes, or a specific set of beliefs, values, or feelings around a subject, and the actions that may emerge from these attitudes — in this case, social accountability and responsibility potentially engendered by medical education towards the underserved.[23] Our interviews elucidated that while participants did not endorse changes in attitudes from their PC participation (in that they believed all medical students had positive beliefs towards and wanted to care for the medically underserved), they did 1) describe the process of bearing witness to the reality of caring for the medically underserved and 2) suggested that this witnessing made them more responsible for and accountable towards their current and future underserved patients.

Other studies rooted in social cognitive theory in healthcare settings have shown that experiential education can result in changed behavior.[24,25] Because of the design of the MSATU survey, it's unlikely that it would be able to capture this change in feelings of accountability, which explains the lack of overall statistical significance. However, it is interesting to note that multiple interviewees referred to the complicated process *they felt ownership* over of applying for hospital-based charity programs. They viewed this practice as integral to their changing of perspective. It may be that having to apply for these programs drove SRFC participant students to believe these services should be more accessible and therefore drove the significant differences in procedure score. This a small example of the process of practice change because of a direct experience that social cognitive theory alludes to[24] — one that, when expanded, is potentially highlighted by community-based work long after students have participated in SRFCs.[19]

Our study acknowledges the limitation that PC

is unable to accommodate all incoming medical students who would like to participate in the SRFC, and therefore non-participating peers may have an equal or even greater commitment to the underserved at baseline. This could be attributed to the institutional commitment to service identified in the qualitative interviews. Although we did not conduct interviews of non-participating students, future research could expand to involve non-participant interviewees. Another limitation is the potential for desirability bias among respondents.

Regardless, this study contributes to the understanding of SRFCs effect on medical students' attitudes and perspective of the medically underserved. These findings have direct implications for future research and SRFC practice, including further methods to elucidate how clinic participation changes both perspectives and attitudes towards medically underserved communities. Our study suggests future educational or participatory opportunities should be shaped around designing and unpacking direct perspectives students have on working with the underserved.

Disclosures

The authors have no conflicts of interest to disclose.

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