

The Development and Efficacy of a Healthcare for the Homeless Medical Education Elective

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Introduction: Street medicine is practiced around the country to provide healthcare for patients experiencing homelessness, but few formal options exist for educating health-allied professionals on how to provide high-quality healthcare to unhoused patients within medical education.

Methods: A student-initiated street medicine organization developed and implemented a curriculum that combines self-directed online learning with street-based education. Clinical students (third- and fourth-year students) enrolled in our program, which included self-paced online didactics, personal reflection exercises, clinical street experiences, and curriculum-based near-peer “car talks” to promote personal reflection and active learning. Didactic elements were used for all learners, and clinical and precepting components were used in conjunction with the online curriculum. To evaluate the effect on medical student attitudes towards individuals experiencing homelessness, students completed the Health Professionals’ Attitudes Toward the Homeless Inventory (HPATHI) before and after the elective.¹

Results: Twelve students completed the four-week elective at the University of Michigan Medical School over a period of 24 months. Of the 10 students who completed the pre- and post-course surveys, statistical analysis (single-factor analysis of variance [ANOVA]) showed improvements in personal advocacy ($F=7.57$, $P<0.05$), social advocacy ($F=6.49$, $P<0.05$), cynicism ($F=6.23$, $P<0.05$), and total HPATHI score ($F=11.79$, $P<0.01$).

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Conclusion: The online modules and service-learning activities used in this elective provided exposure to street medicine for healthcare professionals, resulting in improved attitudes toward individuals experiencing homelessness. While individual community partners and service-learning activities may vary, this model may serve as a framework for other medical schools to develop their street medicine electives.

Keywords

medical education • homelessness • medically underserved • curriculum

Introduction

Service-learning in medical education has demonstrated the potential to develop future community-oriented providers.² Medical students often participate in street medicine as an extracurricular service-learning opportunity, which includes working closely with preceptors to provide healthcare and social services to unhoused community members, also known as healthcare for the homeless (HCH). Other medical education programs have developed curricula to better enable students to treat medically underserved populations, including those served through the HCH elective.^{3–4} These courses have included didactic and shelter- or street-based learning, both as stand-alone electives and as components embedded into ambulatory or family medicine clerkship experiences. Unique among the current literature and efforts to deliver sustainable, street-based care and education is a medical student-initiated curriculum that combines a comprehensive, self-directed learning program with street-based service-learning. Unlike its counterparts at other institutions, the elective is designed, revised, and administered by medical students for their peers, allowing for an innovative near-peer learning and mentorship model to take shape.

In 2018, a group of medical students at University of Michigan Medical School, who were leaders of the student-run extracurricular street medicine program, Wolverine Street Medicine, perceived a need for educational offerings that addressed the unique health needs of unhoused populations. The University of Michigan Medical School has offered an HCH elective since 2020. As of December 2021, 12 students have participated in the elective. The Wolverine Street Medicine, in operation since 2017, serves as the foundation for the near-peer educational aspects of the program and provides infrastructure for clinical student engagement in experiential medical street outreach. Validated tools have been created to evaluate medical professionals' perceptions of individuals experiencing homelessness;^{1,5} among these is the Health Professionals' Attitudes Toward the Homeless Inventory (HPATHI), a 19-item survey tool that assesses provider attitudes toward the HCH. The goal of this inquiry was to understand the efficacy of participation in the HCH elective in influencing medical students' perceptions of individuals experiencing homelessness. Changes were assessed by comparing each student's responses to the HPATHI survey, administered pre- and post-elective participation. This paper also seeks to describe the development of the elective and its components in an effort to elucidate the mechanisms by which these changes in HPATHI scores may have occurred.

Methods

Elective Development and Formal Needs Assessment

The concept of the elective was developed through an informal needs assessment with input from students actively involved in University of Michigan Medical School's street medicine

student organization, Wolverine Street Medicine. A formal needs assessment was conducted concurrently with the elective rollout and helped identify areas of emphasis within the course that would focus on the unique aspects of the HCH elective. Data were compiled from a survey of the graduating class of medical students who did not participate in the elective (N=118). Respondents were asked questions about their comfort, knowledge, and experience with providing care and information to the HCH, along with the complete HPATHI survey. Of participants who quantified their experience with homeless populations, 71.79% had five or fewer HCH exposures through their curricular clinical experiences in medical school, with 57.63% of participants reporting feeling not at all comfortable providing HCH outside of patient facilities.

Given that the majority of students felt ill-equipped to provide HCH outside of traditional settings and had limited encounters with unhoused patients in medical school, the results of the needs assessment demonstrated the importance of greater curricular offerings that expose medical students to the lived experiences of unhoused individuals. Protected elective time, accompanied by didactic components and support through formal institutional channels, was anticipated to provide greater exposure and legitimacy than sporadic, extracurricular involvement through Wolverine Street Medicine alone.

Elective Development

The iterative development process began with the “street run”—a trip made by the HCH students and faculty to homeless shelters to provide care—which served as the foundation for the elective. The team sought to identify the questions that most commonly arose during those experiences. From there, a web-based series of didactic modules was created by student leaders with guidance and review from street medicine preceptors and internal medicine physicians (Table 1).

Table 1. HCH elective didactic content and descriptions

Module	Component Parts	Notes
Course Orientation	<ul style="list-style-type: none"> ▫ Wolverine Street Medicine ▫ Street Medicine Training ▫ Description of Clinical Experiences ▫ Documentation Overview ▫ Review of Diagnostic tools ▫ Project Expectations ▫ Goal Setting 	Project Expectations included creation of a short talk on a preventative health care issue, creation of “car talks,” (short, near-peer chalk talk style presentations to be delivered to preclinical students during street runs), and preparation of a final presentation on a scholarly topic related to healthcare for unhoused individuals or a journal club.
Healthcare for the Homeless 101	<ul style="list-style-type: none"> ▫ Introductory training from the National Healthcare for the Homeless Council 	The National Healthcare for the Homeless Council provides free trainings and resources for individuals and community organizations.

(Continued)

Table 1. (*Continued*)

Module	Component Parts	Notes
Communication	<ul style="list-style-type: none"> ▫ “David’s Story” ▫ Background articles ▫ Harm Reduction & Motivational Interviewing ▫ Trauma Informed Care ▫ Communication Case Studies² ▫ Student Reflection 	The “stories,” referenced are narratives shared by members of the community experiencing homelessness to help educate medical students and healthcare workers and which serve to anchor the theme of each module.
Medical Management on Street Runs	<ul style="list-style-type: none"> ▫ “Daniel’s Story,” ▫ History taking ▫ Foot & Wound Care ▫ Infection & Antibiotic Review ▫ Weather Related Conditions ▫ Addiction Treatment ▫ Communicable Diseases ▫ Hypertension & Cardiovascular Diseases 	Topics were chosen in collaboration with street medicine preceptors and based on student experience of most commonly seen medical conditions.
Mental Healthcare on the Street	<ul style="list-style-type: none"> ▫ “Gracie’s Story” ▫ Mental Healthcare on the Streets Webinar ▫ Data Trends in Suicide & Mental Health ▫ Pathways to Homelessness ▫ Reading: Million Dollar Murray by Malcolm Gladwell ▫ Reading: What Trainees Gain from Community Psychiatric Outreach ▫ Mental Health Case Study 	
Policy & Systems Based Care	<ul style="list-style-type: none"> ▫ “Gary’s Story” ▫ Why Understand Policy? ▫ Defining Homelessness ▫ History of Homeless Policy ▫ Types of Homeless Policy ▫ Local/State/Federal/Around the Country/Global Policies ▫ Special Populations ▫ Solutions? 	
Final Reflections	<ul style="list-style-type: none"> ▫ “Will’s Story” ▫ Language & Stigma Talk ▫ Language Reflection ▫ Goal Reflection ▫ Feedback & Evaluation 	

The modules were informed by student experience with street runs, a review of the existing literature related to HCH, and informal input from community partners and physician experts. The didactics were designed to provide a foundational knowledge base, upon which the course learning objectives could be achieved. Additionally, adjunctive clinical experiences were developed in partnership with community-based organizations that served to expand the settings in which students could engage with HCH.

The elective was developed for upper-level medical students who had completed their clerkship year and were enrolling in electives during the latter portion of their training. This elective assumes students have completed their core clinical clerkships and have knowledge of adult internal medicine. No prerequisite knowledge or experience with HCH is required.

Elective Content: Administration of Elective

In addition to the street-based encounters organized by Wolverine Street Medicine, the elective included opportunities in care delivery at a local homeless shelter, a post-hospitalization recuperative care program, and observational experiences with a supportive housing agency. The breakdown of experiences was intended to approximate a 40-hour workweek (Table 2). Based on the availability of additional community events (e.g., health fairs, outreach events, seasonal opportunities), such activities were also included in the students' schedule. Each enrolled student was asked to complete an HPATHI assessment at the beginning and end of their rotation month to evaluate the impact of the elective.

Elective Content: Material

The didactic modules were intended for independent completion at the learner's discretion, but embedded were real-time opportunities to apply clinical encounters to the didactic content. Each student was also tasked with organizing a journal club or speaker event by the end of the elective. This event was open to all members of the medical school community and created a forum for scholarly reflection on course experiences. As upper-level medical students, participants were also asked to prepare educational content for other learners and to compile four "car talks"—short, informal teaching pearls to share with preclinical student volunteers on the care team during downtime between patient visits or while in transit during a street run.⁶ The learning objectives were designed both to meet core competencies within the University of Michigan Medical School and to provide high-quality learning and teaching opportunities related to HCH for the clinical student (Table 3).

Table 2. Breakdown of elective activities over 4 weeks

Activity	Hours over 4-week Period
Street Medicine Runs (participation and documentation)	40
Work with Non-Medical Care Team Members	50
Online Didactic Modules	60
Preparation and Delivery of Car Talks	5
Preparation and Facilitation of Journal Club or Speaker	5
Total:	160

Table 3. Intended learning outcomes for the HCH elective

1.	Identify the role of social determinants of health in the presentation of medical needs specific to underserved populations and apply this knowledge in the provision of healthcare to homeless persons
2.	Develop greater empathy in patient interactions and practice the delivery of care in home and community settings that meet the patients where they are
3.	Design a project with the goal of making a long-term and sustainable contribution to the Wolverine Street Medicine student organization and their efforts in addressing health disparities induced by homelessness
4.	Recognize the interdependence between clinical and non-clinical care providers in addressing health care for homeless persons
5.	Independently assess patients about whom case workers place medically-related consults, and practice generating a plan of care before staffing with the patient's primary care provider
6.	Prepare and lead a scholarly discussion on a topic related to healthcare for homeless persons for an audience of interested clinical and pre-clinical medical students

Didactic material was administered through the online learning platform Canvas (Instructure, Inc.; Salt Lake City, UT). The grading basis was Satisfactory/Fail, with student assessment determined by written evaluations based on faculty observation (street medicine preceptors), effort demonstrated in completing and progressing through teaching and educational content, and the completion and quality of responses within the Canvas modules. To earn a satisfactory grade, students were required to complete at least 80% of the didactic materials and participate in at least 80% of the clinical experiences. A student leader from the Wolverine Street Medicine was responsible for preparing each elective student's schedule and overseeing completion of the didactic modules via administrator ("teacher") access through Canvas. The student leader was also tasked with ensuring attendance at clinical activities with preceptors and coordinating the evaluations and grading process at the end of the course. This student leader served as a point of contact and support throughout the elective experience.

Elective Content: Reflection

In this elective, students were exposed to some of the greatest societal injustices through both its clinical setting and the patient population it serves. Without adequate opportunities for reflection and debriefing, such experiences can leave learners feeling disempowered. To mitigate this, the course included multiple opportunities for independent reflection within the didactic portion, and opportunities for group debrief were recommended at the end of each street run. Toward the end of the course, the elective student was encouraged to engage other learners by leading these debrief sessions. Additionally, a module at the end of the elective focused on policies related to homelessness, providing the opportunity for students to reflect on how they might engage with local, state, and federal policymakers to advocate for changes that could improve the health of individuals experiencing homelessness on a larger scale. Students were also encouraged and given opportunities to provide both verbal and written feedback on the course at the end of the month.

Statistical Analysis

Statistical analysis was conducted using anonymous, matched pre- and post-test results. Data were entered into a Microsoft Excel spreadsheet in the appropriate form, with reverse-coded variables appropriately accounted for within their respective domain scores. Means and standard deviations for each domain were calculated using Microsoft Excel functions and graphed for both pre- and post-elective responses. Then, the Microsoft Excel ToolPak Add-In was used to perform a single-factor analysis of variance (ANOVA), with the factor being the time point (pre- or post-elective), to determine if the differences in domain scores were statistically significant.

Results

Assessment

The efficacy of the elective was evaluated using the HPATHI, which was given to students pre- and post-elective completion. The HPATHI consists of 19 statements on a five-point Likert scale (Table 4). These statements are further categorized into three domains: personal advocacy (nine items; higher scores indicate a greater sense of personal advocacy), social advocacy (six items; higher scores indicate a greater sense of social advocacy), and cynicism (six items; higher scores indicate a greater sense of cynicism).¹

Table 4. The HPATHI survey questions, with the domains denoted (SA = Social Advocacy, C = Cynicism, PA = Personal Advocacy)

	Question	Domain	Reverse Coded toward total HPATHI score?	Reverse Coded toward domain score?
1	Homeless people are victims of circumstance.	SA	No	No
2	Homeless people have the right to basic healthcare.	SA	No	No
3	Homelessness is a major problem in our society.	SA	No	No
4	Homeless people choose to be homeless.	C	Yes	No
5	Homeless people are lazy.	C	Yes	No
6	Healthcare dollars should be directed towards the poor and homeless.	SA	No	No
7	I am comfortable being the primary care provider for a homeless person with a major mental illness.	SA	No	No

(Continued)

Table 4. (*Continued*)

	Question	Domain	Reverse Coded toward total HPATHI score?	Reverse Coded toward domain score?
8	I feel comfortable being part of a team when providing care to the homeless.	SA	No	No
9	I feel comfortable providing care to different minority and cultural groups.	C	No	Yes
10	I feel overwhelmed by the complexity of the problems that homeless people have.	C	Yes	No
11	I understand that my patients' priorities may be more important than following my medical recommendations.	PA	No	No
12	Doctors should address the physical and social problems of the homeless.	PA	No	No
13	I entered medicine because I want to help those in need.	PA	No	No
14	I am interested in working with the underserved.	PA	No	No
15	I enjoy addressing psychosocial issues with patients.	PA	No	No
16	I resent the amount of time it takes to see homeless patients.	PA	No	No
17	I enjoy learning about the lives of my homeless patients.	PA	Yes	Yes
18	I believe that social justice is an important part of healthcare.	PA	No	No
19	I believe caring for the homeless is not financially viable for my career.	PA	Yes	Yes

Questions were numbered according to the original design and validation study for HPATHI.¹ The total domain and HPATHI scores were calculated (Figure 1). A single-factor ANOVA was then performed comparing pre-elective and post-elective participant data. As the data were paired by participant, the factor determining group assignment was course completion status (pre- vs. post-elective). The between-groups difference in scores were statistically significant at $\alpha=0.05$ for personal advocacy ($F=7.57, P<0.05$), social advocacy ($F=6.49, P<0.05$), cynicism ($F=6.23, P<0.05$), and total HPATHI score ($F=11.79, P<0.01$).

Institutional Review Board Approval

This study was deemed exempt from review by the University of Michigan Institutional Review Board.

Twelve students at an urban medical school completed the elective course. Of those, three male and seven female participants aged 25–28 completed both the pre-elective and post-elective surveys. (The remaining two students, who did not complete both surveys, were excluded from the analysis). Prior to the elective, four participants were third-year medical students, and six participants were fourth-year medical students. One of the third-year students completed the post-elective survey in their fourth year (Table 5).

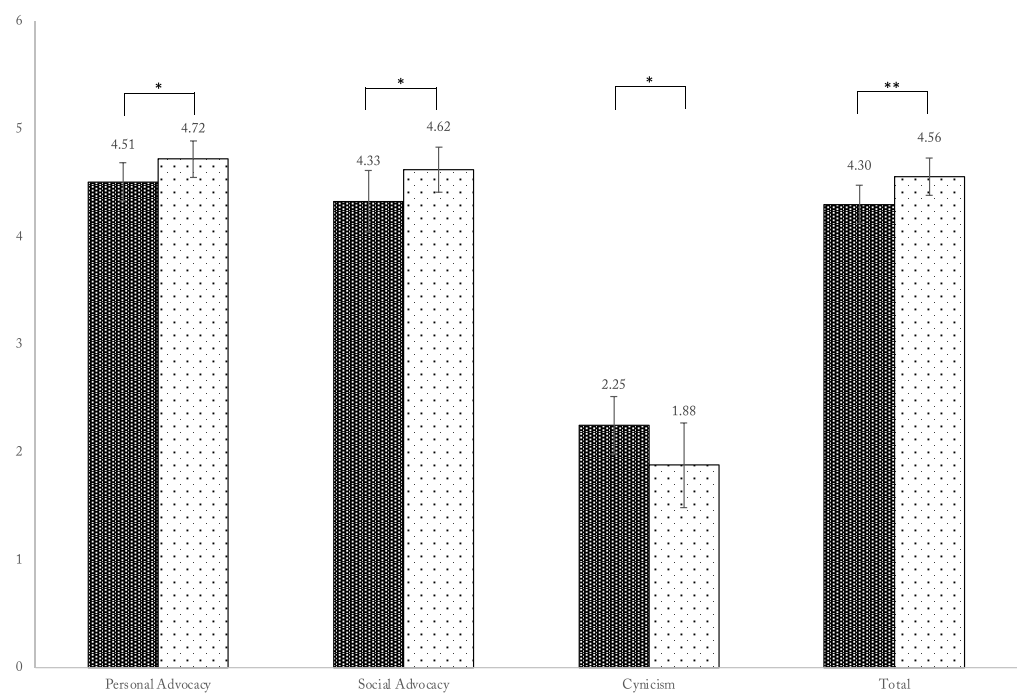


Figure 1. HPATHI results before starting (dark-plaid) and after completing (light-dotted) the elective. (* P<0.05, ** P<0.01, by single-factor ANOVA)

Table 5. HPATHI scores broken down by section for the 10 individuals who filled out surveys

Age	Gender	Class	Pre- or Post-Elective	Personal Advocacy (Average)	Social Advocacy (Average)	Cynicism (Average)	HPATHI
25	M	MS4	Pre-Elective	4.33	4.17	2.25	4.16
25		MS4	Post-Elective	4.78	4.67	1.25	4.74
25	F	MS3	Pre-Elective	4.56	4.33	2.00	4.37
25		MS4	Post-Elective	5.00	4.67	1.75	4.74
27	M	MS3	Pre-Elective	4.44	4.00	2.50	4.11
27		MS3	Post-Elective	4.44	4.67	2.25	4.37

(Continued)

Table 5. (*Continued*)

Age	Gender	Class	Pre- or Post-Elective	Personal Advocacy (Average)	Social Advocacy (Average)	Cynicism (Average)	HPATHI
26	F	MS4	Pre-Elective	4.67	4.67	2.25	4.47
26		MS4	Post-Elective	4.78	4.83	2.25	4.58
25	F	MS4	Pre-Elective	4.44	4.00	2.00	4.21
25		MS4	Post-Elective	4.67	4.33	1.50	4.53
25	F	MS3	Pre-Elective	4.33	4.67	2.25	4.32
25		MS3	Post-Elective	4.56	4.50	2.50	4.32
26	M	MS4	Pre-Elective	4.33	4.00	2.50	4.05
26		MS4	Post-Elective	4.78	4.67	1.75	4.63
27	F	MS4	Pre-Elective	4.78	4.67	2.50	4.47
27		MS4	Post-Elective	4.89	5.00	1.50	4.84
27	F	MS4	Pre-Elective	4.78	4.50	1.75	4.58
27		MS4	Post-Elective	4.78	4.33	2.00	4.47
28	F	MS3	Pre-Elective	4.44	4.33	2.50	4.21
28		MS3	Post-Elective	4.56	4.50	2.00	4.42

Discussion & Conclusions

To help educate medical students about healthcare for patients experiencing homelessness, we developed and successfully implemented an elective that includes clinical experiences, peer teaching assignments, and self-paced didactics. The results of this inquiry demonstrate that participation in the elective led to small but statistically significant improvements in medical student attitudes toward HCH. This project also created protected academic time for students to engage in service-learning—opportunities that far exceed what was available through extra-curricular involvement alone. Limitations of this elective include the small sample size, which was restricted by the capacity to enroll only one student per month due to the availability of community partnerships. The relatively new emergence of the HCH inclusion in medical school curricula is another limitation; given the paucity of similar programs, it is difficult to evaluate the elective's efficacy in comparison with programs at other institutions. Additionally, given the voluntary nature of participation for the elective, it is also difficult to ascertain whether the observed changes in the scores were influenced, in part, by the preexisting attitudes of students who were already inclined to be receptive to this type of experience.

Due to the location-dependent nature of the experiential activities, the generalizability of this portion of the elective is limited. However, the online didactics are generalizable to any community with only minor modifications. Establishing a connection with a local street medicine program willing to host students was essential to providing the majority of the experiential learning opportunities. Adapting the elective to individual communities will require partnerships with local agencies that serve individuals experiencing homelessness; however, this elective

represents a successful framework that could be implemented in other settings. This inquiry also demonstrates that student-initiated and student-administered courses are possible within an existing street medicine framework when supported by institutional infrastructure.

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