Oregon Health & Science University
School of Medicine

Scholarly Projects Final Report

Title *(Must match poster title; include key words in the title to improve electronic search capabilities.)*
Bridging Knowledge Gaps in Undergraduate Medical Education on the Homeless Patient Population

Student Investigator's Name
Mimi T. Le

Date of Submission *(mm/dd/yyyy)*
03/17/2023

Graduation Year
2023

Project Course *(Indicate whether the project was conducted in the Scholarly Projects Curriculum; Physician Scientist Experience; Combined Degree Program [MD/MPH, MD/PhD]; or other course.)*
Scholarly Projects Curriculum

Co-Investigators *(Names, departments; institution if not OHSU)*
N/A

Mentor's Name
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Robert Cloutier, MD, MCR

Mentor's Department
Internal Medicine (AS), Emergency Medicine (RC)

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Concentration Lead's Name
David Buckley, MD, MPH

Project/Research Question
What is the utility of an undergraduate medical student mini-curriculum on caring for homeless patient populations?

Type of Project *(Best description of your project; e.g., research study, quality improvement project, engineering project, etc.)*
Curriculum development, research study.

Key words *(4-10 words describing key aspects of your project)*
Undergraduate medical education, homelessness, vulnerable populations, curriculum

Meeting Presentations
If your project was presented at a meeting besides the OHSU Capstone, please provide the meeting(s) name, location, date, and presentation format below (poster vs. podium presentation or other).
International Street Medicine Symposium (Virtual) 10/21/2020-10/23/2020 (Poster)

Publications *(Abstract, article, other)*
If your project was published, please provide reference(s) below in JAMA style.
N/A

Submission to Archive
Final reports will be archived in a central library to benefit other students and colleagues. Describe any restrictions below (e.g., hold until publication of article on a specific date).
N/A

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Next Steps
What are possible next steps that would build upon the results of this project? Could any data or tools resulting from the project have the potential to be used to answer new research questions by future medical students?

- Continue offering mini-curriculum to undergraduate medical students, especially those who identify as third or fourth-year medical students and expanding access to nursing, physician assistant, dental students and more.
- Implement educational intervention as a requirement in the undergraduate medical curriculum at OHSU for interested parties and/or those who will work closely with homeless patient populations (Emergency Medicine, Addiction Care, Wound Care/Vascular Surgery, etc).
- Expand access to clinical elective "Introduction to Street Medicine" to provide more students with the opportunity to have positive clinical interactions with the homeless population.
- Optimize mini-curriculum with needs assessment and integrate with available curriculums created at other medical schools.

Please follow the link below and complete the archival process for your Project in addition to submitting your final report.

https://ohsu.ca1.qualtrics.com/jfe/form/SV_3ls2z8V0goKiHZP

Student's Signature/Date *(Electronic signatures on this form are acceptable.)*
This report describes work that I conducted in the Scholarly Projects Curriculum or alternative academic program at the OHSU School of Medicine. By typing my signature below, I attest to its authenticity and originality and agree to submit it to the Archive.

X _____
Student's full name

Mentor's Approval *(Signature/date)*

X _____
Mentor Name

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Report: *Information in the report should be consistent with the poster, but could include additional material. Insert text in the following sections targeting 1500-3000 words overall; include key figures and tables. Use Calibri 11-point font, single spaced and 1-inch margin; follow JAMA style conventions as detailed in the full instructions.*

Introduction *(≥250 words)*

In January 2018, there were over 553,000 people experiencing homelessness including those in shelters and those living on the streets in the United States. Although homelessness has been recognized as a national issue since the 1870s, the rates of homelessness have been increasing steadily since 2016[1]. Among states with the highest rates of homelessness, Oregon had over 14,000 homeless individuals on a given night. In a 2015 point-in-time count, Portland had 3800 individuals who slept on the streets, in shelters, or in temporary housing[2]. Homelessness disproportionately affects marginalized populations including veterans, people of color, those with low socioeconomic status, and/or those struggling with mental health disorders including substance use disorders[3,4].

Many homeless patients rely heavily on emergency departments and face multiple barriers when seeking healthcare services and their attitude/comfort in doing so may be shaped in part by their previous encounters with healthcare providers[6]. In one Canadian study, 28% of physicians in the emergency room felt overwhelmed when caring for homeless patients and their negative attitudes toward this population increased over time[7]. However, such trends are pervasive even in undergraduate medical education with multiple studies linking progression through the course of medical education with a rise in cynicism, decreased empathy and interest in caring for homeless patients. Professional socialization and clinical contact affect student attitude development around houseless patients; medical students with more experience with the homeless showed more positive attitudes and interest toward this population. Proposed educational strategies for maintaining empathy among medical students towards this vulnerable patient population have focused on modeling positive behaviors, guided clinical experiences, and curriculum development[7,8].

Methods *(≥250 words)*

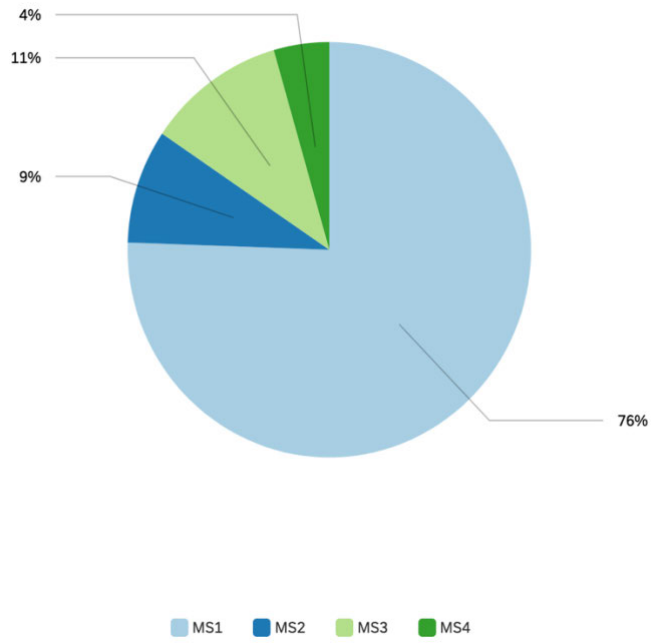
This is an Institutional Review Board (IRB) approved study in which we utilized Qualtrics to design a survey to assess medical student attitude, awareness, and knowledge on homelessness. We (Dr. Anya Solotskaya (current mentor), Dr. Robert Cloutier (previous mentor), and I developed a mini-curriculum which consisted of a lecture on the pathophysiology and epidemiology of homelessness (developed and delivered by Dr. Solotskaya), a lecture on trauma-informed care for homeless patients (developed and delivered by social workers Drew Grabham and Juliana Wallace), and a multidisciplinary provider panel which consisted of addiction-care specialists (Improving Addiction Care Team), social workers, nurses, community leaders (Portland Street Medicine medical director, Beacon Village PDX) who work closely with homeless populations. The mini-curriculum was offered on a voluntary basis during select enrichment weeks for first-year medical students (10/23/2020 (live), 12/14/2020 (recording from 10/23/2020), 5/26/2021(live)) though there was some participation from medical students at different levels of their training. Students were surveyed before and after delivery of the mini-curriculum assess for changes and to explore the utility of this educational intervention. Questions addressing awareness and attitude were answered based on a Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) while questions for knowledge were multiple choice with five answer choices. A smaller cohort of 10-12 medical students also participated in a clinical elective called “Introduction to Street Medicine” during the time the mini-curriculum was offered with further targeted educational activities and volunteer time with Portland Street

Medicine to help meet general medical needs of homeless patients living in encampments or in shelters. Pre and post survey results were then compared side-by-side. Further, for attitude and awareness questions, a paired two sample t-test was performed and p values were calculated from t values using GraphPad with $p < 0.05$ deemed as statistically significant.

Results *(≥500 words)*

Of the 45 students surveyed, 76% identified as first-year medical students (MS1), 9% as second-year medical students (MS2), 11% as third-year medical students (MS3), and 4% as fourth-year medical students (MS4). 64% of respondents reported previous experience working with houseless individuals, which included volunteering with needle exchange clinics, shelters, housing efforts, and policy change.

Demographics (n=45)	
Year	
MS1	76%
MS2	9%
MS3	11%
MS4	4%
Prior experience working with unhoused population	64%



The pre and post-surveys were identical and questions were divided into three sections: attitude, awareness, and knowledge. In terms of attitude, students rank statements based on a Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). Please see table below for specific statements respondents were asked to rank. The mean rating for each statement in the attitude section did not change drastically; there was a slight increase in agreement that students are interested in working with underserved and vulnerable populations (like the homeless) (4.58 to 4.73), feel like a helpful contributor as a team member caring for homeless patients (4.16 to 4.53; statistically significant), that social justice is an important part of healthcare (4.82-4.91), that homelessness is a significant public health issue that all future physicians should care about (4.87-4.98), and feeling uncomfortable when meeting homeless individuals (2.84-2.91). There was also a slight decrease in feeling overwhelmed by the complexity of problems homeless patients have (4.16 to 3.80) though this was not statistically significant.

In terms of awareness, students were asked to rank statements based on the same Likert Scale. Between surveys, students had larger shift in agreement in knowing what resources are available for people who are homeless in Portland (2.64 to 4), understanding why people experience homelessness (3.78 to 4.38), and understanding why people remain homeless (3.69 to 4.38). The differences in pre and post survey responses for the awareness questions were all statistically significant.

In terms of knowledge, students were asked questions based off of the content presented in Dr. Solotskaya's lecture (please see table below for specific questions). In general, there was a large increase in the percentage of students who answered the questions correctly after exposure to the mini-curriculum with the largest increase being from 6.7% correct to 46.7% correct ("What proportion of the general houseless population suffer from a substance abuse disorder?"). Other questions asked include: "How many people experience houselessness on a given night in Portland?" (4.4 to 31.1% correct), "What proportion of the general houseless population suffer from a mental health disorder?" (4.4% to 40% correct), "What proportion of the general houseless population suffer from a chronic health condition?"

Survey Question	Pre	Post
ATTITUDE	**Mean (SD)**	**Mean (SD)**
I am interested in working with underserved and vulnerable populations like the houseless.	4.58 (.75)	4.73 (.44)
I feel like I can contribute as a member of a team that is providing care to the houseless.	4.16 (1.05)	4.53 (.54)*
I feel overwhelmed by the complexity of problems houseless individuals have.	4.16 (.92)	3.89 (.85)
Social Justice is an important part of healthcare.	4.82 (.68)	4.91 (.35)
Houselessness is a significant public health issue that all future physicians should learn about.	4.87 (.62)	4.98 (.15)
I feel uneasy when I meet houseless individuals.	2.84 (1.15)	2.91 (1.09)
AWARENESS	**Mean (SD)**	**Mean (SD)**
I know what resources are available for people who are houseless in Portland.	2.64 (1.23)	4.00 (.60)*
I understand why people experience houselessness.	3.78 (.84)	4.38 (.64)*
I understand why people remain houseless	3.69 (1.05)	4.38 (.64)*
KNOWLEDGE	**% Correct**	**% Correct**
How many people experience houselessness on a given night in Portland?	4.4	31.1
What proportion of the general houseless population suffer from a substance abuse disorder?	6.7	46.7
What proportion of the general houseless population suffer from a mental health disorder?	4.4	40
What proportion of the general houseless population suffer from a chronic health condition?	6.7	28.9
What proportion of the general houseless population have a history of trauma or abuse?	42.2	44.4

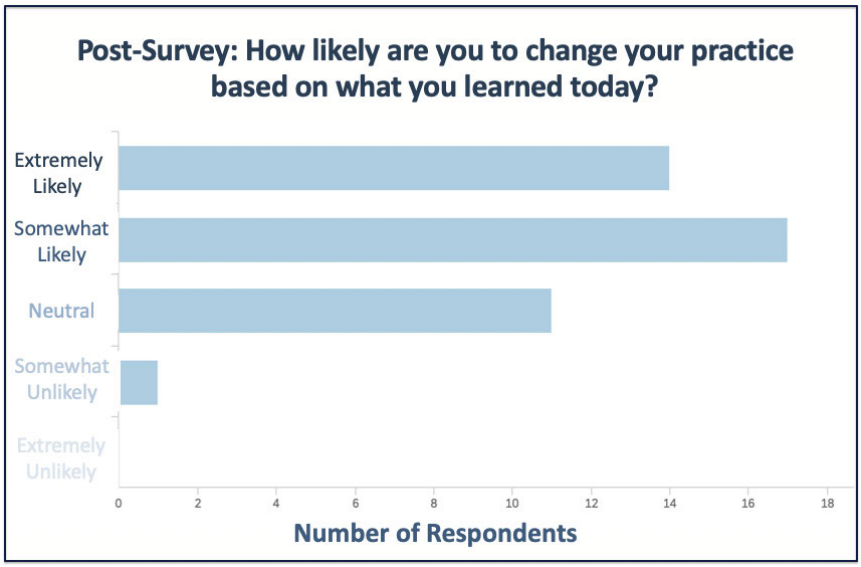
Figure 2: Pre and post survey responses. Attitude and awareness questions were answered on a Likert scale

1: Strongly disagree
2: Disagree
3: Neutral
4: Agree
5: Strongly agree

(6.7-28.9% correct). However, there was little change for the final question: "What proportion of the general houseless population have a history of trauma or abuse?" (42.2 to 44.4 correct).

MEAN	SD	MEAN	SD	TTEST VALUE	P VALUE
4.58	0.75	4.73	0.44	-1.16	0.2534
4.16	1.05	4.53	0.54	-2.10	0.0413
4.16	0.92	3.89	0.85	1.45	0.1553
4.82	0.68	4.91	0.35	-0.79	0.4341
4.87	0.62	4.98	0.15	-1.16	0.2536
2.84	1.15	2.91	1.09	-0.30	0.7684
2.64	1.23	4	0.6	-6.67	<.0001
3.78	0.84	4.38	0.64	-3.81	0.0004
3.69	1.05	4.38	0.64	-3.76	0.0005

In the post-survey, students were asked several questions that were not present in the pre-survey. When asked "How likely are you to change your practice based on what you learned today?", 14 respondents (33%) responded "extremely likely", 17 (40%) "somewhat likely", 11 (25%) "neither likely or unlikely", 1 (2%) "somewhat unlikely", and 0 (0%) "extremely unlikely" (43 total respondents).



1	Extremely likely	32.56%	14
2	Somewhat likely	39.53%	17
3	Neither likely nor unlikely	25.58%	11
4	Somewhat unlikely	2.33%	1
5	Extremely unlikely	0.00%	0
			43

Discussion *(≥500 words)*

In summary, we developed a mini-curriculum on homelessness for medical students and designed a survey to assess student attitude, awareness, and knowledge on homelessness before and after receiving the educational intervention in order to understand its utility.

We had a total of 45 medical students who participated in our research study after offering the mini-curriculum on three separate occasions (two live sessions and one recorded session) in 2020 and 2021. Data collection was halted due to the COVID19 pandemic and difficulty with scheduling logistics. 78% were first-year medical students, 64% had prior experience working with homeless populations, and generally had a positive attitude towards homeless individuals that did not change significantly, which can be expected given that this was a voluntary enrichment activity and therefore a self-selecting group of students. Unfortunately, we were unable to offer this mini-curriculum to medical students who were further along in their training (MS3 or MS4) since studies show that student attitudes become more negative with time. Scheduling and logistics are often more challenging for this cohort of medical students due to differences in clinical rotations and their associated workloads.

In general, student attitudes increased slightly between pre and post survey responses though most of these changes were not statistically significant (there was a statistically significant change in terms of students who felt like they could contribute as a member of the team caring for homeless patients, which was encouraging). Again, this is a self-selecting group of students who are interested in caring for homeless patients, which accounts for the generally positive attitudes towards this population. There were statistically significant increases in student awareness in terms of resources available for homeless individuals and why people experience homelessness and stay homeless, indicating that our mini-curriculum could be helpful in spreading awareness, even in those who have much experiencing working with this population. Although statistics were not performed on the knowledge questions (based on the structure of questions as multiple choice), we did observe a large increase in the percentage correct (at least a 22.2%) in 3 out of 4 questions. Pre-survey responses indicate that students tend to over-estimate the extent of homelessness and issues surrounding this topic (substance abuse, chronic health conditions, mental health). Based on student feedback, it may be more productive to rewrite the knowledge questions so that students are asked a more variegated pool of clinically applicable questions (“Which are the following resources are available…?” or “What special considerations should be taken with a homeless patient with cellulitis”) rather than questions about statistics (“What proportion of X has Y…”).

More than half of the students (31 out of 43; some students did not complete the entire survey) indicated they were likely to change their practice based on what they learned from this mini-curriculum, which was very encouraging. Our study results and student feedback indicate that there is a utility to our educational intervention and optimization of the mini-curriculum for future medical students (especially those further along in their training) will make this a valuable tool in providing compassionate care for this vulnerable population. There are several publications of medical student curriculums[9-11] on homeless patient populations that are worth examining to ensure that we provide the best necessary learning tools to our learners and future providers.

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Conclusions *(2-3 summary sentences)*

- Students generally had a positive attitude towards houseless individuals that did not change significantly based on pre and post survey responses.
- After participation in educational intervention, students had increased awareness and knowledge on the issues affecting houseless individuals.
- About half of the participants found the intervention to be helpful and many were likely to change their practice based on what they learned.
- Further optimization and integration (especially for senior medical students) are needed.

References *(JAMA style format)*

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