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Abstract

Health professions students, including occupational therapy students, often have limited exposure to unhoused populations, which may alter their attitudes and self-efficacy to participate in their care. In turn, this could reduce access and quality of care for these marginalized groups. The purpose of this study was to evaluate the impact of a phased multimodal learning approach on interprofessional health sciences students' attitudes and self-efficacy in providing care to unhoused individuals. A pre-posttest single group design was used to evaluate a didactic presentation, poverty simulation, and street-based experiential learning experience. Findings revealed significant differences in students' (N=257) attitudes and self-efficacy in providing care, and many students reported this as an "eye-opening experience." This learning approach evoked a strong emotional response, improved attitudes and self-efficacy, and has implications for future advocacy efforts related to caring for unhoused populations.

Keywords

Interprofessional education, self-efficacy, poverty, homeless, houseless

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ABSTRACT

Health professions students, including occupational therapy students, often have limited exposure to unhoused populations, which may alter their attitudes and self-efficacy to participate in their care. In turn, this could reduce access and quality of care for these marginalized groups. The purpose of this study was to evaluate the impact of a phased multimodal learning approach on interprofessional health sciences students' attitudes and self-efficacy in providing care to unhoused individuals. A pre-posttest single group design was used to evaluate a didactic presentation, poverty simulation, and street-based experiential learning experience. Findings revealed significant differences in students' (N=257) attitudes and self-efficacy in providing care, and many students reported this as an "eye-opening experience." This learning approach evoked a strong emotional response, improved attitudes and self-efficacy, and has implications for future advocacy efforts related to caring for unhoused populations.

Homeless, homelessness, houseless, and unhoused are used interchangeably in the literature; however, the preference terminology is unhoused, as it reflects a temporary description of an experience rather than a defining trait designated by lack of shelter. This terminology exemplifies the systemic inequities and social determinants of health (SDOH) associated with housing instability and promotes a more compassionate view of the individual (United Way of the National Capital Area, 2023). Subcategories of unhoused populations include transitional, episodic, chronic, and hidden (Caring Works, 2024). Transitional is described as a single period of housing insecurity associated with

a catastrophic event, while episodic is defined as three or more periods within a given year. Chronic is defined as lasting longer than one year, and although society often perceives chronic to be the most prevalent subcategory, it actually comprises a very small minority of the unhoused population. Generally, these individuals have more complex physical, mental, or emotional health concerns than for those described as transitional or episodic. Finally, hidden refers to individuals who are residing with other individuals in an environment that does not belong to them. This arrangement may be temporary or permanent. The term "hidden" comes from the fact these individuals do not have housing support and cannot be identified by local and state agencies or organizations (Caring Works, 2024).

It is common for unhoused populations to encounter barriers related to the basic medical care required for optimal health and well-being. These barriers include the insecurity of basic needs, lack of insurance or underinsurance, stigma, the complexity of the medical system, negative experiences with healthcare providers, and high turnover of healthcare providers who understand the individual's unique situation (Thompson et al., 2023; Thorndike et al., 2022). Unhoused individuals rely heavily on community-based clinics for their medical care, but these clinics present unique challenges and barriers as well. There is evidence to support that providers within these clinics lack respect and patience for the populations they serve, and that the outreach within the community is restricted to the immediate surrounding area and not widespread to the greater area it is intended to serve (Thorndike et al., 2022).

Lack of respect from providers and negative attitudes toward these individuals has been associated with negative health outcomes (Boylston & O'Rourke, 2013). These traits have also been observed in health professions students training to become independent providers. It is common for students to view unhoused individuals through a stereotypical lens, ultimately altering their perceptions. This is especially present in those who have had minimal interactions prior to entering their training program (Gardner & Emory, 2018). The unfamiliarity leads students to feel uncomfortable engaging in activities where they lack experience and are unconfident in their success (Klassen & Klassen, 2018). This lack of confidence and belief in one's ability is defined as low self-efficacy (American Psychological Association, 2009). One way to increase self-efficacy is to thoughtfully expose health professions students to populations in which they have limited experience to enhance the understanding and familiarity of care needs. This exposure can take shape in many forms, including didactic, simulation, or community engagement learning activities. Work completed by O'Dell and Kobayashi (2024) found that after students engaged in a clinical activity with the unsheltered population, the students reported an increase in awareness and understanding of the daily struggles unhoused individuals face. Exposing students to the healthcare barriers associated with unhoused populations through experiential service learning has been shown to promote the carryover of skills into graduate and clinical work (Zicka & Reeb, 2021).

An example of experiential service learning is street medicine, or street rounds, which are typically volunteer-based services designed to provide care to unhoused populations in the environment where they live (Rasul et al., 2023). Care provided during street rounds can include basic medical attention, provision of necessities (food, water, hygiene supplies, clothing), and, most importantly, conversations with the individual to understand their lived experience better. This conversation serves as an opportunity for the team to view the person as an individual rather than a medical case (Rasul et al., 2023). Street medicine programs have been shown to increase health outcomes and are becoming a more popular model of care (Rasul et al., 2023). This has led to a novel initiative to train future health professionals to provide street medicine, particularly through interprofessional education (IPE), which occurs when "students from two or more professions learn about, from, and with each other (World Health Organization [WHO], 2010). These student-led interventions, while volunteer-based in nature, have been shown to be an effective way of providing care to unhoused populations (Goodier et al., 2015).

Merging IPE and experiential service learning, such as street medicine, has been shown to improve cultural competency among healthcare students (Bender et al., 2020; Coffin et al., 2021; Pierangeli & Lenhart, 2018), but little is known about the attitudes and self-efficacy of interprofessional health professions students as it relates specifically to unhoused populations. Moreover, the bulk of the literature has been focused on disciplinary dyads, such as medical and nursing students (Gardner & Emory, 2018), with little literature on the benefit of a comprehensive IPE approach focused on the Interprofessional Education Collaborative (IPEC) Core Competencies of Collaborative Practice (IPEC, 2023). Therefore, the purpose of this study was to evaluate a phased multimodal learning approach on interprofessional health professions students' attitudes and self-efficacy in providing care to unhoused populations. This threefold learning approach was comprised of a didactic workshop, poverty simulation, and street-based medicine experience in the community in which students live, learn, and practice.

Occupational Therapy Significance
Occupational therapy (OT) has been shown to improve existing interprofessional services by bringing an occupational perspective to the table (Marshall & Rosenburg, 2014; Marshall et al., 2018). While there is a continued research focus on the professions' drive to address the inequities that coincide with unhoused populations (Marshall et al., 2021), little is known about the assessment of OT student learning outcomes as it relates to unhoused populations and the interprofessional team. This is underscored by the standards of OT curriculum in which students are taught to view patients holistically at an individual and population level (Asbjornslett et al., 2023).

Although the current study was guided by the 2018 Accreditation Council for Occupational Therapy Education (ACOTE) standards, the findings are congruent with the revised 2023 standards as it related to SDOH (B.1.3), effective communication (B.3.21), and interprofessional teams (B.3.22; ACOTE, 2018). In the revised standards, ACOTE (2023) mandated that programs teach SDOH as it relates to public health and the welfare of persons, groups, and populations. In addition, effective communication

with interprofessional teams and principles of team dynamics are important components of OT education curricula in which students are exposed to the importance of interprofessional collaboration and communication at person, group, and population levels.

Occupational therapy as a profession can make a significant impact on the physical, mental, and emotional health of unhoused populations, which may improve their overall quality of life (Raphael-Greenfield et al., 2023). The most common OT interventions for unhoused populations are related to the development and improvement of life skills, many of which are offered in student-led clinics or day programs and not within street-based medicine programs (Marshall et al., 2021; Raphael-Greenfield et al., 2023). The application of OT theory to practice extends beyond that of basic life skills, and there is a significant need to educate OT and other health profession students to approach the care of unhoused populations from a more holistic and comprehensive perspective.

Theoretical Framework

Interprofessional learning has been shown to enhance student self-efficacy (Keshmiri & Ghelmani, 2023; Nørgaard et al., 2013). Self-efficacy is the internal motivation required to reach a goal or make a difference (Bandura & Cervone, 1983), and can refer to the individual's confidence in their own role and skill set within a team or group (George et al., 2020; Nørgaard et al., 2013). Self-efficacy is particularly critical in learning environments such as medical education, where learning is dependent on overcoming a range of doubt-inducing intellectual motivational challenges (Klassen & Klassen, 2018). Based on the self-efficacy theory, to see a change in behavior or performance, one must first take into consideration past experiences, modeling of others, receive coaching or feedback, and consider the physiological or emotional stress around the situation (Bandura, 1986).

Specific to interprofessional health professions students' attitudes and self-efficacy in providing care to unhoused populations, exposure to the population and associated barriers of care is a critical step in understanding their provider role. Facilitated learning through IPE experiences and experiential opportunities may promote more positive attitudes toward the unhoused population and enhance self-efficacy and confidence to provide care (Zeien et al., 2023). Much of the experiential learning that takes place between health profession students and the unhoused population occurs in the community through a community-based learning approach. The philosophy of community or service-based learning aims to instill moral values, promote professional commitments in learners, and train individuals to respond to the needs of their communities (Emrani et al., 2024). Additionally, similar to the self-efficacy theory, a crucial component of community-based learning is critical self-reflection following the completion of the learning activity. Community-based learning alone has been shown to increase critical thinking skills and problem-solving and promote personal development, and it is becoming a more common learning strategy in health professions education (Emrani et al., 2024).

Material and Methods

Design

The purpose of this study was to evaluate a phased multimodal learning approach on interprofessional health professions students' attitudes and self-efficacy in providing care to unhoused populations. Occupational therapy students engaged with the following disciplines throughout the IPE experience: audiology, dental hygiene, dentistry, medicine, music therapy, nursing, pharmacy, physical therapy, physician assistant, public health, social work, and speech-language pathology. This study used a one group pretest-posttest design to survey a sample of interprofessional health professions students from a single health sciences center in the North Central Appalachian Region of the United States. Eligibility criteria were established based on the student's participation in the Community Action Poverty Simulation (CAPS) for the 2022-2023 academic year (August 2022 – May 2023). Participation in the CAPS was dependent on the discipline-specific programmatic requirements, and thus, the range of student populations varied throughout the academic year. All students registered for the CAPS were deemed eligible to participate regardless of program year or type.

Phased Learning Approach

The phased multimodal IPE learning approach consisted of three learning experiences: 1) a didactic workshop, 2) CAPS, and 3) street-based medicine rounds. The didactic workshop was designed and presented by members of the research team who had knowledge and experience in caring for individuals within the unhoused population. The 2-hour didactic workshop was offered both face-to-face and recorded so it could be shared with the interprofessional programs participating in CAPS. The class session included relevant information related to the unique health needs of this population, the specific roles of healthcare providers, and an interactive case study.

The CAPS is a 2-hour interactive simulation designed to simulate the experience of an individual living in poverty (Missouri Community Action Network, 2022). During this experience, participants are provided individual roles and placed in simulated families that are designed to represent actual families who are experiencing poverty in the United States. The simulation experience consists of four 15-minute "weeks" that represent what it might be like to live in poverty for one month. During this time, the students interact with various simulated community resources around the room to obtain employment, pay bills, provide childcare, and try to survive throughout the month. The community resources include roles such as social services, mortgage and realty, a supermarket, the public school, a pawn shop, and a faith-community agency. Student volunteers and members of the actual community (such as the United Way) graciously served in the community resources roles for these simulations. Following the simulation, students, volunteers, and faculty participated in a group debriefing session. A total of 10 simulations were offered during the duration of data collection and were facilitated by members of the research team. During each simulation experience, students from at least three different disciplines were intermixed to create an interprofessional environment where students could learn about, from, and with one another. The

disciplines differed for each session depending on schedule availability. An anonymous open-ended survey was provided at the end of the simulation to gather feedback on participant experiences.

The street-based medicine experiential learning experience was embedded within a preexisting health-sciences-led outreach program that occurred one evening every two weeks within the local community. Members of the research team served as faculty leaders within the program. During this 2-hour experience, health sciences students were prebriefed on the history of the program, expectations for street-based medicine, how to interact and communicate with unhoused individuals, general safety guidelines, and the timeline of events. All students began at the temporary community housing organization, where they interacted with short and long-term residents before traveling downtown to participate in street rounds. Once downtown, students were separated into groups (led by both a student and faculty leader), where they spent the next hour walking the streets with a backpack of supplies in search of individuals in need. Health sciences students provided basic medical care (dressing changes, glucose monitoring, blood pressures), administered vaccinations (COVID-19, TDAP, influenza, pneumococcal) and over-the-counter medications, distributed naloxone, and provided necessities (water, food, clothing, hygiene supplies). At the conclusion of the experience, a group debriefing session was held. Data were collected in a log for each experience, which included the number of students and types of disciplines present, number of interactions with members of the unhoused community, types of items requested and distributed, unique situations, and themes occurring during the debriefing session.

During each street-based experiential learning experience, OT students were exposed to health education from other professions on disease prevention related to immunizations. Additionally, OT students were challenged to complement the in-time patient education that was provided related to harm reduction techniques for substance use, minor medical ailments, and education on community-based resources. Through this exposure, OT students gained practice with therapeutic communication while practicing inclusive language and cultural humility.

Measurements
A demographic survey was developed by the research team based on standard data collected during IPE experiences and data relevant to prior experiences interacting with the homeless population. This demographic survey included items related to age, sex, gender identity, program type and year, as well as questions specifically related to prior exposure to unhoused populations. Students were asked the type of community where they were raised (urban, suburban, or rural), how often they noticed unhoused individuals in their community, if they had ever participated in serving or providing care to these individuals, and if themselves or someone they know had ever been unhoused.

Attitudes were measured using the Health Professionals' Attitudes Toward the Homeless Inventory (HPATHI; Buck et al., 2005). The HPATHI is a 19-item self-report survey that was designed to measure healthcare providers attitudes toward unhoused

populations. The measure is separated into three subscales: cynicism (four items), social advocacy (six items), and personal advocacy (nine items). Cynicism reflects a negative attitude toward working with unhoused populations, while social and personal advocacy reflect a positive attitude and commitment to care. Items are rated on a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Scores are calculated by individual subscale and a total score. Higher mean scores are indicative of stronger attitudes for each respective subscale and a positive attitude for the total score. When calculating the total score, the cynicism subscale was reverse-coded. Initial psychometrics revealed reliability coefficients ranging from 0.72-0.84 on subscales and total scale with evidence of strong content and construct validity (Buck et al., 2005). In the current study, the Cronbach alpha coefficients for cynicism, social advocacy, and personal advocacy subscales were 0.44, 0.69, and 0.79, respectively, and the alpha coefficient for the total HPATHI was 0.85.

Self-efficacy beliefs in interprofessional teams were measured using the Self-Efficacy for Interprofessional Experiential Learning Scale (SEIEL; Mann et al., 2012). The SEIEL is a 16-item self-report survey that was designed to measure perceptions of self-efficacy in health professions students. The measure is separated into two subscales: interprofessional interaction (eight items) and interprofessional team evaluation and feedback (eight items). Interprofessional interaction reflects the ability to learn and work as a team, while interprofessional team evaluation and feedback reflects the ability to evaluate and provide feedback to interprofessional team members. Items are rated on a Likert scale from 1 (Low Confidence) to 10 (High Confidence), with higher mean scores indicative of higher perceived self-efficacy. Initial psychometrics revealed reliability coefficients of 0.77 and 0.90 for the respective subscales with evidence of strong content and construct validity (Mann et al., 2012). In the current study, the Cronbach alpha coefficients for the interprofessional interaction and interprofessional team evaluation and feedback subscales were 0.97 and 0.94, respectively.

Immediately following the CAPS experience, participants completed a post-survey that is provided in the facilitator manual of the simulation kit by The Missouri Community Action Network (Missouri Community Action Network, 2022). The open-ended questions of this post-survey were used to investigate the context of quantitative data.

Procedures
All measures were either publicly available or approved for use. Institutional Review Board approval was obtained from West Virginia University in Summer 2022 prior to beginning the 2022-2023 academic year (August 2022-May 2023). The CAPS was already scheduled for interprofessional groups for the Fall term and thus was used as a point of contact for students to enroll in the study. All students who were scheduled to participate in the CAPS received an email in early August with a link to the anonymous pre-survey, which included a demographic questionnaire, prior exposure to unhoused populations, the HPATHI, and the SEIEL. Reminder emails were sent weekly for three weeks.

All students enrolled in the CAPS were then given the opportunity to attend the face-to-face or recorded didactic workshop led by research team members before attending their scheduled CAPS session. Some disciplines (such as nursing and pharmacy) required all students to attend the didactic workshop, but not all disciplines required it as part of their curriculum. Students then participated in their scheduled CAPS session. Following the CAPS, students could attend the street-based medicine experiential learning experience with members of the research team. Nursing, occupational therapy, and pharmacy required all students to attend at least one of the experiences, with other disciplines offering it on a volunteer basis.

The didactic workshop, CAPS, and street-based medicine experiences were offered continuously from September-December. Following the last scheduled CAPS session, all students who had participated in CAPS were given the opportunity to complete the anonymous post-survey, which mirrored the pre-survey aside from the addition of open-ended questions about the street-based experiential learning experience. These procedures were then repeated with a new group of students from January-May 2023. In May 2023, all data were combined and analyzed in the aggregate.

Data Analysis
All quantitative data were analyzed using SPSS v.28 (International Business Machines Corporation, 2022). Prior to analysis, data were cleaned, and cases that did not complete both outcome measures for the pre-and post-surveys were removed. In addition, normal distribution was verified for the outcome measures prior to statistical testing. Descriptive statistics were used to report on demographic characteristics of the student participants and prior exposure to the homeless population. Chi-square comparisons were conducted to analyze differences between student demographics and outcome measures. Independent sample t-tests were used to compare differences between pre-post measures, and Pearson correlations were used to analyze relationships between scores on outcome measures.

Thematic analyses of qualitative data collected from the CAPS post-survey were completed using a combination of topic modeling as well as inductive thematic coding. Topic models were explored using the topic models package within the statistical software R (Grün & Hornik, 2011; R Core Team, 2022). This topic modeling employed unsupervised machine learning to identify latent variables in two text-based survey responses from participants. Using the average of the four algorithms offered in the topic models package, three topics emerged for the question: *What insights did you glean from the simulation?* and four topics emerged for the question *What action steps will you take to reduce poverty barriers in your community?* (Arun et al., 2010; Cao et al., 2009; Deveaud et al., 2014; Griffiths & Steyvers., 2004). Topic numbers were determined using the ldatuning package in R (Murzintcev, 2020; R Core Team, 2022). To ensure supervision, topics were assigned by the research team using inductive thematic coding based on word frequencies in the topic clusters.

Results

A detailed description of student demographics can be found in Table 1. Once cases were removed for incomplete responses, a total of 257 students participated in the study, with 221 completing the pre-test and 36 completing the post-test, yielding a 16.2% post-test response rate. The target population of students who participated in at least one CAPS session (see Table 2) was 578, thus resulting in 44.4% of students completing either the pre- or post-test. The mean age of students was 22.24, with most students majoring in nursing (26.5%), occupational therapy (26.5%), and pharmacy (9.3%). Most students identified as female (89.9%) and were in their first (35.7%) or fourth (32.5%) year of program study. Over half (57.6%) of students reported that they were raised in a rural area, which was expected given the geographic location of the academic institution. Less than half of the participants (44.83%) reported that they had noticed unhoused populations in their home communities, with only 8.62% having provided direct care to one or more individuals. Although over 67% of students reported that they had participated in some form of community service with the homeless community, nearly 17% of students reported they had never engaged with unhoused individuals.

Table 1

Interprofessional Student Demographics for Overall Pre-Post Test

	Total ($N = 257$)		Pre-Test ($N = 221$)		Post-Test ($N = 36$)	
	F (%)	*M*	*F* (%)	*M*	*F* (%)	*M*
Age		22.24		22.21		22.42
Program Type						
Audiology	5 (1.9)		5 (2.3)			
Dental Hygiene	3 (1.2)		3 (1.4)			
Dentistry	1 (0.4)		1 (0.5)			
Music Therapy	2 (0.8)		2 (0.9)			
Nursing	73 (28.4)		61 (27.6)		12 (33.3)	
Occupational	68 (26.5)		61 (27.6)		7 (19.4)	
Therapy			21 (9.5)		3 (8.3)	
Pharmacy	24 (9.3)		17 (7.7)		3 (8.3)	
Physical Therapy	20 (7.8)		10 (4.5)		5 (13.9)	
Physician Assistant	15 (5.8)		20 (9.0)		2 (5.6)	
Public Health	22 (8.6)		8 (3.6)		1 (2.8)	
Social Work	9 (3.5)		11 (5.0)		3 (8.3)	
Speech Language Pathology	14 (5.4)					
Current Program Year						
1	91 (35.7)		77 (35.2)		14 (38.9)	
2	39 (15.3)		33 (15.1)		6 (16.7)	
3	40 (15.7)		37 (16.9)		3 (8.3)	
4	83 (32.5)		71 (32.4)		12 (33.3)	

Current Gender Identity			
Female	208 (89.9)	179 (81)	30 (83.3)
Male	49 (19.1)	42 (19)	6 (16.7)
Description of Hometown		9 (4.1)	1 (2.8)
Urban/Inner-City	10 (3.9)	129 (58.4)	19 (52.8)
Suburban/Residential	148 (57.6)	81 (36.7)	16 (44.4)
Rural	97 (37.7)		

Table 2

Interprofessional Program Demographics for CAPS

	N = 578
	F (%)
Program Type	
Audiology	11 (1.9)
Dental Hygiene	22 (3.8)
Dentistry	59 (10.2)
Medicine	2 (0.4)
Music Therapy	4 (0.7)
Nursing	142 (24.57)
Occupational Therapy	107 (18.51)
Pharmacy	29 (5.02)
Physical Therapy	38 (6.57)
Physician Assistant	49 (8.48)
Public Health	51 (8.83)
Social Work	30 (5.19)
Speech Language Pathology	34 (5.88)
Current Program Year	
1	135 (23.36)
2	199 (34.43)
3	45 (7.79)
4	199 (34.43)

Health Professionals' Attitudes Toward the Homeless Inventory

A detailed description of mean differences for the total HPATHI and associated subscales can be found in Table 3. Significant mean differences were noted between pre-and post-tests for the social advocacy ($p = 0.02$), personal advocacy ($p < 0.001$), and total HPATHI ($p = 0.001$) scores. No significant difference was noted for the cynicism subscale (*M* 8.65, *SD* 1.98). There were no significant differences noted between outcome measures and student age, gender identity, discipline, or program year. Correlations between subscales and total scores can be found in Table 4. For

those who reported noticing unhoused populations in their communities, there were significant positive correlations between social advocacy *(r = 0.27, p < 0.01)*, personal advocacy (*r* = 0.17, p < 0.01), and total HPATHI scores (*r* = 0.21, *p* < 0.01). Results suggest that those who had prior exposure to unhoused populations within their communities were more likely to advocate for their care and report more positive attitudes toward their needs.

Self-Efficacy for Interprofessional Experiential Learning Scale
A detailed description of mean differences for the SEIEL interprofessional interaction and interprofessional team evaluation and feedback subscales can be found in Table 3. Significant mean differences were noted between pre- and post-tests for both interprofessional interaction (*p* < 0.001) and interprofessional team evaluation and feedback (*p* < 0.001) subscales. There were no significant differences noted between outcome measures and student age, gender identity, discipline, or program year. Correlations between outcome measures can be found in Table 4. No significant differences were noted between SEIEL subscales and those who reported noticing unhoused populations in their communities. However, there were significant relationships between the SEIEL and HPATHI. Interprofessional interaction was correlated with cynicism (*r* = -0.13, *p* < 0.05), social advocacy (*r* = 0.19, *p* < 0.01), personal advocacy (*r* = 0.28, *p* < 0.01), and total HPATHI (*r* = 0.26, *p* < 0.01). Interprofessional team evaluation and feedback was correlated with social advocacy (*r* = 0.21, *p* < 0.01), personal advocacy (*r* = 0.30, *p* < 0.01), and total HPATHI (*r* = 0.26, *p* < 0.01). Results suggest that those who had more positive attitudes toward the unhoused populations and were more likely to advocate for them rated their perceived self-efficacy higher as members of an interprofessional team.

Table 3

Mean Differences of HPATHI and SEIEL Scores at Pretest and Posttest

Measure	Subscale	Min.	Max.	Pre-Test *M*	*SD*	Post-Test *M*	*SD*	*t*	*df*	*p*
HPATHI	Cynicism	4	20	8.7	1.9	8.3	2.2	1.2	253	0.23
	Social Advocacy	6	30	24.1	3.0	25.4	2.7	-2.4	252	0.02
	Personal Advocacy	9	45	36.2	4.3	39.0	4.0	-3.7	253	<0.001
	Total HPATHI	19	95	75.4	7.7	80.1	7.6	-3.3	250	0.001
SEIEL	Interprofessional Interaction	8	80	65.3	12.1	71.4	7.4	-4.0	69.1	<0.001
	Interprofessional Team Evaluation and Feedback	8	80	61.2	12.3	69.1	8.0	-4.9	64.8	<0.001

Table 4

Relationships Between Outcome Variables and Homelessness Awareness

	M	*SD*	1	2	3	4	5	6
1 Cynicism	8.65	1.98	—					
2 Social Advocacy	24.28	2.97	-0.56**	—				
3 Personal Advocacy	36.56	4.39	-0.43**	0.64**	—			
4 Total HPATHI	76.10	7.85	-0.68**	0.86**	0.90**	—		
5 Interprofessional Interaction	66.18	11.76	-0.13*	0.19**	0.28**	0.26**	—	
6 Interprofessional Team Evaluation and Feedback	62.38	12.12	-0.10	0.21**	0.30**	0.26**	0.87**	—
7 Homelessness Awareness	3.38	0.93	-0.07	0.24**	0.17**	0.21**	-0.06	-0.06

* $p < 0.05$ ** $p < 0.01$

CAPS Thematic Analysis

Following participation in CAPS, students were asked to evaluate how well each of the Interprofessional Education Collaborative (IPEC) Core Competencies (2023) were met on a 5-point Likert scale with higher scores indicative of meeting the IPEC Core Competency. The means for each Core Competency were as follows: Values and Ethics (4.41), Roles and Responsibilities (4.37), Interprofessional Communication (4.51), and Teams and Teamwork (4.70).

Students completed a post-assessment, which included two open-ended questions from the validated post-survey provided in the CAPS kit (Maguire et al., 2017; Missouri Community Action Network, 2022), to gather their experiences following the simulation, including insights gleaned from the simulation and plans for action in reducing poverty within their communities. Two overarching categories and seven themes were derived from the data using topic modeling. The first category labeled *insights gleaned* included the following three themes: 1) understanding hardships, 2) emotional response, and 3) managing families. The second category, *plan for action,* included four themes: 4) allocating resources, 5) volunteering time, 6) advocating for change, and 7) demonstrating empathy.

Insights gleaned was about understanding hardships, experiencing an emotional response, and perceived difficulties in managing families. Understanding hardship was identified by 82% of students during the simulation. Hardship was considered in terms of financial hardship, limited resources, inability to take care of poor health, and difficulty finding reliable transportation.

> *"This was HARD...I didn't realize how much things cost, I really take it for granted having a car and food in my house."*

> *"Although this is nowhere close to what living a real life of poverty is, I was stressed, frustrated and overwhelmed trying to keep my family afloat...I can't imagine the feelings and hardships a person or family in poverty experiences in the real world."*

Twenty-five percent of students mentioned emotions elicited during the simulation. Emotions felt while embodying their simulated personas included stress, unhappiness, discomfort, helplessness, and notions of immorality.

> *"During the simulation, I was super stressed and was getting frustrated. It really helped me see how frustrating this cycle is and how never being able to catch up is draining. It truly made me more forgiving."*

> *"It was very eye opening on how much things really cost & what it's like to have to stretch your money... I can't imagine how people feel for their whole lives living like this."*

Twenty percent of students mentioned both the benefits and drawbacks of having a family. Some students found family to be a necessity to excel in the simulation, while others found family to create a sizeable burden.

> *"I learned how difficult it can be especially for the head of a household who falls on hard times to get everything in order...It really opened my eyes to how difficult it can be for a family to make it."*

> *"The oldest child in a low-income family sometimes has to sacrifice their lives to help their family stay above water."*

> *"Working together as a family can help you survive and pay all of your bills and then have some money to spare after."*

Plan for action was about allocating resources, volunteering time, advocating for change, and demonstrating empathy. When asked what action steps they would take to reduce poverty-related barriers within their community, 36% of participants responded by describing the importance of researching, referring, educating, and sharing community resources.

> *"[I will] provide opportunities and resources to those who need assistance. Support goes a long way."*

> *"[I will] do my research on services in my community to be able to help populations I interact with."*

> *"[I will] educate myself. Involve myself in more opportunities such as volunteering to help the community I am in."*

After participating in the simulation, 35% of students mentioned they planned to volunteer time or donate money to agencies that support families in poverty, and 21% of students mentioned advocating for change within legislation and healthcare policies.

> *"I can advocate for people who are in these situations and advocate for legislation that would help them."*

> *"[I plan to] provide care to anyone that needs it and be understanding of families in poverty. [I will] advocate for these patients and develop better systems."*

Lastly, 19% of students left the simulation with the desire to demonstrate more empathy toward individuals and families experiencing poverty.

> *"When patients who are in low-income situations, I will respect them better and show more empathy."*

Street-Based Experiential Learning Experience
A total of 482 students participated in the street-based experiential learning experience during the 2022-2023 academic year, resulting in an approximate mean of 32 students per learning experience. Represented disciplines included occupational therapy, nursing, medicine, pharmacy, physical therapy, and public health. The approximate mean number of unhoused individuals that were served on a given night was 25, with an approximate total of 375 encounters during the academic year. These numbers were based on data from the log; however, the numbers are approximate due to the transient nature of the unhoused population, recounting the memory of faculty and student leaders during debriefing, and unforeseen cancellations or delays in street-based rounds based on scheduling availability.

The major items distributed during the experiential learning experiences included Naloxone, underwear, socks, hand warmers, gloves, hygiene supplies, snacks, and coffee. The major items requested included ponchos, sleeping bags, tents, tarps, and flashlights. These items were subsequently purchased after the requests and distributed at the next street-round offering. When reviewing summaries of unique situations experienced during rounds, some of the reports included psychiatric/mental health needs, wound care and dressing changes, and reports of assaults and overdoses from days prior. A content summary of the themes discussed by students during the debriefing included eye-opening experiences, a sense of community, lack of previous awareness, stigma, medication adherence, substance use disorders, and the critical need for Naloxone. Debrief data was collected in a log during the concluding debrief of each street-based learning experience by a member of the research team.

Discussion

This work highlights meaningful associations between experiential learning experiences, attitudes, and self-efficacy for interprofessional health professions students. The current study also provides important guidance for ethical considerations related to practice and research with unhoused populations. Finally, the findings offer practical implications for future education and research.

Exposure to vulnerable populations, such as those experiencing homelessness, has been shown to increase self-efficacy through the repeated awareness of barriers to care (O'Dell & Kobayashi, 2024). Prior to participating in these experiences, most participants had no prior exposure to unhoused populations due to the rurality and geographic location of their home environments. This is not surprising given that unhoused populations in rural environments are often not as visible due to the availability of shelters, a more spread-out population, and staying "hidden" with friends or relatives during point-in-time counts (Kauppi et al., 2017). This further highlights the importance of increasing self-efficacy as it relates to motivating students to interact with populations that may be unfamiliar to them. Findings suggest positive correlations between exposure and positive attitudes toward unhoused populations. Students who are exposed to caring for unhoused populations may be more likely to discern positive attitudes, thus reinforcing the importance of including this type of experiential learning in health sciences education. In addition, this specific sample of students anecdotally reported a desire to engage in future advocacy efforts for unhoused populations by recognizing the hardships faced by these individuals and their families. This awareness may lead to more empathy and understanding when providing care.

Participants who reported more positive attitudes toward unhoused populations were more likely to rate their self-efficacy higher within the interprofessional team. In addition, participants rated the IPEC (2023) Core Competency of Teams and Teamwork most highly following the CAPS experience. Another core component of the CAPS is to highlight available community resources that are often underutilized for impoverished and unhoused populations. It has been shown that coordinated care with care teams rather than siloed care can lead to a greater awareness of available community-based resources (Kiran et al., 2020). This further reiterates the importance of the interprofessional approach to these activities in education and practice, and the value of having a comprehensive team when providing care to unhoused populations. In addition to the value of the team, it is also important for students to understand the unique roles and responsibility for each profession (IPEC, 2023). Specific to OT, it is important to highlight the contribution students can make to a team dynamic during OT education to build the self-efficacy needed to partake in interprofessional team approaches to not only the care of individuals in the unhoused population but to all clients the OT encounters.

Ethical Considerations

Creating environments in which students feel psychologically safe has been shown to encourage learning and increase self-efficacy (Byeon et al., 2023; Edmondson & Lei, 2014). The current study prioritized safety not only for student participants, but also for

the unhoused populations cared for. Experiential experiences, both as service learning and research opportunities, pose varied levels of risk. Albeit all researchers have the responsibility to promote and maintain the protection of human subjects through respect for persons, beneficence, and justice (Department of Health, Education, and Welfare, 1973), the risk of harm for vulnerable and marginalized populations is much greater than that of the general population (Talbert, 2018). Special consideration should be given to the potential injustices associated with the involvement of unhoused populations.

Unhoused populations in local environments are easily accessible and can be predisposed to recurring research based simply on convenience. Serious mental illnesses and substance use disorders are much more prevalent among unhoused populations than those who are housed. This is in addition to the discrimination, stigma, and biases omnipresent in their daily lives (Substance Abuse and Mental Health Services Administration, 2023). The culmination of these factors can further potentiate risk for harm and the ability to provide informed consent. Special attention should be given to ethical training of researchers, educators, and students interacting with unhoused populations, so that 'responsible advocacy' is prioritized and exercised within each interaction (Smith, 2008).

It is important to note that this experiential learning experience was integrated into an already existing street-based medicine program. This program had existed for over a decade at the time of this study, and the faculty facilitators developed personal relationships with the unhoused population within the community. Students and leaders alike undergo formal training prior to participating in the experiential learning experience, and thoughtful prebriefing and debriefing is integrated throughout. Prior to replication, it is recommended that faculty complete formal training in de-escalation and mental health first aid and understand the institution's student support resources. While many institutions and professional programs require community service hours for degree completion, it is important to ensure that students and programs are aiming to enhance service offerings or develop service initiatives that promote connection to the unhoused population rather than viewing the population as a service requirement. Planning should also include the sustainability of the program to avoid developing a service that cannot be offered on a continued, ongoing basis (Goodier et al., 2015).

Implications for Occupational Therapy Education and Research

Evidence has shown that a single interaction with unhoused populations can alter affective and social psychological processes through changes in attitude and the development of empathy (Opalinski et al., 2021). Positive persuasions can promote self-efficacy by encouraging and empowering learners (Pajares, 2005). Occupational therapy students, in addition to other health professions students who participated in street rounds, frequently referred to it as an "eye opening experience." Although the authors highly value the opportunity for students to interact with unhoused individuals, the findings from the current study demonstrate that simply simulating these experiences can have a significant impact on the affective and social-psychological processes of interprofessional health sciences students by eliciting a powerful

emotional response. This is especially important for educators and educational programs unable to facilitate a street-based experiential learning experience but still want to engage their students in this important learning opportunity. Engaging occupational therapy students in a multimodal IPE approach can be an effective learning strategy to meet ACOTE (2023) standards B.1.3, B.4.23, and B.4.25 as students are able to demonstrate knowledge of the SDOH and epidemiological factors associated with the unhoused during the didactic and simulation portions, effectively communicate with interprofessional team members, and exhibit stronger team dynamics by understanding the roles of team members. Through this combination, OT and health profession students can deliver person-centered and population-centered care that is timely, safe, and effective during the street medicine portion.

This learning opportunity is valuable to OT students and other health profession students on the team. The students can learn outside the classroom and in an environment where most providers do not typically practice. This provides students the opportunity to make critical and creative team decisions in the moment, learn in real time the social inequities this population faces, and see firsthand the barriers to healthcare these individuals encounter. The learning process continues through the debrief where students can share their experiences with the other students while also gaining the perspectives of others. Finally, this experience supports the promotion of self-efficacy related to their specific profession which can be carried into various clinical settings and across various populations.

Findings from this study warrant the need to further explore the lived experiences of not only OT students, but interprofessional groups of health professions students as it relates to their attitudes and perceptions of unhoused populations. More specifically, gathering qualitative data from focus groups or individual interviews may provide a richer description of the relationships between exposure, attitudes, perceptions, and self-efficacy. Furthermore, replicating this study in an urban setting where OT students enter the educational environment with frequent exposure and interaction with unhoused communities may provide meaningful data as it relates to attitudes and self-efficacy in providing care.

Limitations
All participants were required to participate in the CAPS; however, the didactic and street-based medicine experiences were voluntary for most disciplines based on curricular requirements and scheduling conflicts. Therefore, not all students participated in all components of the phased learning approach. The delivery method for students who engaged with the didactic materials also varied, as some experienced their session in person while others watched virtually. Participants also had different experiences with unhoused populations prior to engaging in interprofessional learning. Some students had volunteered frequently in street rounds or soup kitchens, while others had never interacted with an unhoused individual. Furthermore, some students participated in additional experiences during the data collection period as part of their service learning or volunteer requirements.

Data was self-reported and collected at a single site. Different facilitators led the debriefing sessions following the CAPS and street-based medicine experiences based on scheduling availability. Although the set of questions to guide debriefings were predetermined, student experiences varied based on the content discussed during these conversations. Post-assessment tools given to students following the simulation were previously validated; however, the open-ended question *What action steps will you take to reduce poverty barriers in your community?* may be biased in that it implies action steps will be taken. Finally, the environment where street rounds were conducted is transient and unable to be controlled, and thus, not all participants had the same richness in experiences while participating.

Conclusion

Exposing OT students to an interprofessional approach to care for unhoused populations is a critical step in promoting positive attitudes and enhancing self-efficacy to care. These opportunities foster growth in knowledge, skills, and attitudes and can increase the likelihood for students to engage in advocacy efforts to help reduce barriers of care. It is important for educators to think beyond the classroom and begin to incorporate experiential learning opportunities, such as poverty simulations or street-based medicine experiences, to immerse their students into the lived experiences of these individuals. The findings from this study offer promising implications for interprofessional education and future opportunities for students to engage in care within their communities.

References

Accreditation Council for Occupational Therapy Education. (2018). 2018 Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretative guide (effective July 31, 2020). *American Journal of Occupational Therapy, 72*(2). https://doi.org/10.5014/ajot.2018.72S217

Accreditation Council for Occupational Therapy Education. (2023). *2023 Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretative guide (effective July 31, 2025).* https://acoteonline.org/accreditation-explained/standards/

American Psychological Association. (2009). *Teaching tip sheet: Self-efficacy.* https://www.apa.org/pi/aids/resources/education/self-efficacy

Arun, R., Suresh, V., Veni Madhavan, C., & Narasimha Murthy, M. (2010). *On finding the natural number of topics with latent dirichlet allocation: some observations* (Vol. 6119). Springer Berlin Heidelberg. http://doi.org/10.1007/978-3-642-13657-3_43

Asbjornslett, M., Skarpaas, L. S., & Stigen, L. (2023). "Being holistic is a lot to ask": A qualitative, cross-national exploration of occupational therapists' perceptions and experiences of holistic practice. *Occupational Therapy International*, 1–10. https://doi.org/10.1155/2023/2432879

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology, 45*(5):1017–1028. https://psycnet.apa.org/doi/10.1037/0022-3514.45.5.1017

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Bender, K., Wilson, J., Adelman, E., DeChants, J., & Rutherford, M. (2020). A human-centered design approach to interdisciplinary training on homelessness. *Journal of Social Work Education, 56*(S1), 528-545. https://doi.org/10.1080/10437797.2020.1743218

Boylston, M., & O'Rourke, R., (2013). Second-degree Bachelor of Science in nursing students' preconceived attitudes toward the homeless and poor: A pilot study. *Journal of Professional Nursing, 29*(5), 309–317. https://doi.org/10.1016/j.profnurs.2012.05.009

Buck, D. S., Monteiro, F. M., Kneuper, S., Rochon, D., Clark, D. L., Melillo, A., & Volk, R. J. (2005). Design and validation of the Health Professionals' Attitudes Toward the Homeless Inventory (HPATHI). *Environmental Health: A Global Access Science Source, 5*(2), 1-8. https://doi.org/10.1186/1472-6920-5-2

Byeon, Y, V., Brookman-Frazee, L., Aarons, G.A., & Lau, A.S. (2023). Misalignment in community mental health leader and therapist ratings of psychological safety climate predicts therapist self-efficacy with evidence-based practices (EBPs). *Administration and Policy in Mental Health and Mental Health Services Research, 50*(4), 673-684. https://doi.org/10.1007/s10488-023-01269-8

Cao, J., Xia, T., Li, J., Zhang, Y., & Tang., S. (2009). A density-based method for adaptive LDA model selection. *Neurocomputing*, *72*(7-9), 1775-1781. https://doi.org/10.1016/j.neucom.2008.06.01

Caring Works. (2024). *Did you know there are four types of homelessness?* Homelessness. https://www.caringworksinc.org/did-you-know-there-are-four-types-of-homelessness/

Coffin, D., Collins, M., & Waldman-Levi, A. (2021). Fostering inter-professional education through service learning: The Belize experience. *Occupational Therapy in Health Care, 35*(2), 217-226. https://doi.org/10.1080/07380577.2021.1877862

Department of Health, Education, and Welfare. (1973). *The Belmont Report.* https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf

Deveaud, R., SanJuan, E., & Bellot, P. (2014). Accurate and effective latent concept modeling for an ad hoc information retrieval. *Document Numerique, 17*(1), 61-84. https://doi.org/10.3166.DN.17.1.61-84

Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychological and Organizational Behavior,1,* 23-43. https://doi.org/10.1146/annurev-orgpsych-031413-091305

Emrani, M., Khoshnood, Z., Farokhzadian, J., & Sadeghi, M. (2024). The effect of service-based learning on health education competencies of students in community health nursing internships. *BMC Nursing*, *23*(1), 1–8. https://doi.org/10.1186/s12912-024-01799-y

Gardner, J., & Emory, J. (2018). Changing student's perceptions of the homeless: A community service learning experience. *Nursing Education in Practice, 29,* 133-136. https://doi.org/10.1016/j.nepr.2018.01.001

George, T. P., DeCristofaro, C., & Murphy, P. F. (2020). Self-efficacy and concerns of nursing students regarding clinical experiences. *Nurse Education Today*, *90*. https://doi.org/10.1016/j.nedt.2020.104401

Goodier, R., Uppal, S., & Ashcroft, H. (2015). Making international links to further interprofessional learning: A student-led initiative for the homeless population. *Journal of Interprofessional Care, 29*(3), 265–267. https://doi.org/10.3109/13561820.2014.944258

Griffiths, T., & Steyvers, M. (2004). Finding scientific topics. *Proceedings of the National Academy of Sciences of the United States, 101*(14), 5228. https://doi.org/10.1073/pnas.0307752101

Grün B., & Hornik, K. (2011). Topic models: An R package for fitting topic models. *Journal of Statistical Software*, *40*(13), 1-30. https://doi.org/10.18637/jss.v040.i13

International Business Machines Corporation. (2022). *IBM SPSS statistics.* https://www.ibm.com/products/spss-statistics

Interprofessional Education Collaborative. (2023). *IPEC core competencies.* https://www.ipecollaborative.org/core-competencies

Kauppi, C., O'Grady, B., Schiff, R., Martin, F., & Ontario Municipal Social Services Association (2017). *Homelessness and hidden homelessness in rural and northern Ontario.* https://doi.org/10.13140/rg.2.2.20311.57764

Keshmiri, F., & Ghelmani, Y. (2023). The effect of continuing interprofessional education on improving learners' self-efficacy and attitude toward interprofessional learning and collaboration. *Journal of Interprofessional Care*, *37*(3), 448–456. https://doi.org/10.1080/13561820.2022.2084053

Kiran, T., Rodrigues, J. J., Aratangy, T., Devotta, K., Sava, N., & O'Campo, P. (2020). Awareness and use of community services among primary care physicians. *Healthcare Policy*, *16*(1), 58–77. https://doi.org/10.12927/hcpol.2020.26290

Klassen, R. M., & Klassen, J. R. L. (2018). Self-efficacy beliefs of medical students: A critical review. *Perspectives on Medical Education*, 7(2), 76–82. https://doi-org.wvu.idm.oclc.org/10.1007/s40037-018-0411-3

Maguire, M. S., Kottenhahn, R., Consiglio-Ward, L., Smalls, A., & Dressler, R. (2017). Using a poverty simulation in graduate medical education as a mechanism to introduce social determinants of health and cultural competency. *Journal of Graduate Medical Education*, *9*(3), 386–387. https://doi.org/10.4300/JGME-D-16-00776.1

Mann, K., McFetridge-Durlde, J., Breau, L., Clovis, J., Martin-Misener, R., Matheson, T., Beanlands, H., & Sarria, M. (2012). Development of a scale to measure health professions students' self-efficacy beliefs in interprofessional learning. *Journal of Interprofessional Care, 26*, 92-99. https://doi.org/10.3109/13561820.2011.640759

Marshall, C. A., & Rosenberg, M. W. (2014). Occupation and the process of transition from homelessness. *Canadian Journal of Occupational Therapy, 81*(5), 330–338. https://doi.org/10.1177/0008417414548573

Marshall, C. A., Lysaght, R., & Krupa, T. (2018). Occupational transition in the process of becoming housed following chronic homelessness. *Canadian Journal of Occupational Therapy, 85*(1), 33–45. https://doi.org/10.1177/0008417417723351

Marshall, C. A., Boland, L., Westover, L. A., Isard, R., & Gutman, S. A. (2021). A systematic review of occupational therapy interventions in the transition from homelessness. *Scandinavian Journal of Occupational Therapy, 28*(3), 171–187. https://doi.org/10.1080/11038128.2020.1764094

Missouri Community Action Network. (2022). *The community action poverty simulation*. https://www.povertysimulation.net/

Murzintcev, N. (2020). ldatuning: Tuning of the latent dirichlet allocation models parameters. R package version 1.0.2. https://CRAN.R-project.org/package=ldatuning

Nørgaard, B., Draborg, E., Vestergaard, E., Odgaard, E., Jensen, D. C., & Sørensen, J. (2013). Interprofessional clinical training improves self-efficacy of health care students. *Medical Teacher*, *35*(6), e1235–e1242. https://doi.org/10.3109/0142159X.2012.746452

O'Dell, D. & Kobayashi, A. (2024). Nursing students' perceptions of people who are homeless. *Journal of Christian Nursing, 41*(1), 44-49. https://doi.org/10.1097/CNJ.0000000000001012

Opalinski, A.S., Groton, D., Linette, D., Newman, D., & D'Avolio, D. (2021). Immersion experiences about homelessness and psychological processes of nursing students: A pilot study. *Journal of Nursing Education, 60*(4), 216-219. https://doi.org/10.3928/01484834-20210322-06

Pajares, F. (2005). Gender differences in mathematics self-efficacy beliefs. In A.M. Gallagher & J.C. Kaufman (Eds.). *Gender differences in mathematics: An integrative psychological approach (*pp. 294–315). Cambridge University Press. https://doi.org/10.1017/CBO9780511614446.015

Pierangeli, L.T., & Lenhart, C.M. (2018). Service-learning: Promoting empathy through the point-in-time count of homeless populations. *Journal of Nursing Education, 57*(7), 436-439. https://doi.org/10.3928/01484834-20180618-10

R Core Team. (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-Project.org/

Raphael-Greenfield, E., Baltich, K., Wilson, T. & Lowinger, R. (2023). Use of a performance-based occupational therapy assessment of executive function with the homeless population: A case report. *Open Journal of Occupational Therapy, 11*(3), 1-14. https://doi.org/10.15453/2168-6408.2005

Rasul, T. F., Morgan, O., Henderson, A., & Elkhadem, A. (2023). Soft tissue infection and follow-up for an unsheltered patient: The role of street medicine providers in bridging gaps in care. *BMJ Case Reports*, *16*(2). E251082. https://doi.org/10.1136/bcr-2022-251082

Smith, L.J. (2008). How ethical is ethical research? Recruiting marginalized, vulnerable groups into health services research. *Journal of Advanced Nursing, 62*(2), 248-257. https://doi.org/10.1111/j.1365-2648.2007.04567.x

Substance Abuse and Mental Health Services Administration [SAMHSA]. (2023). *Addressing social determinants of health among individuals experiencing homelessness.* https://www.samhsa.gov/blog/addressing-social-determinants-health-among-individuals-experiencing-homelessness

Talbert, E. (2018). Beyond data collection: Ethical issues in minority research. *Ethics and Behavior, 29*(7), 531-546. https://doi.org/10.1080/10508422.2018.1531005

Thorndike, A. L., Yetman, H. E., Thorndike, A., N, Jeffrys, M. & Rowe, M. (2022). Unmet health needs and barriers to health care among people experiencing homelessness in San Francisco's mission district: A qualitative study. *BMC Public Health, 22*(1), 1071, 1-9. https://doi.org/10.1186/s12889-022-13499-w

Thompson, E.L., Galvin, A.M., Garg, A., Diener, A., Deckard, A., Griner, S.B., & Kline, N.S. (2023). A socioecological perspective to contraceptive access for women experiencing homelessness in the United States. *Contraception, 122*,109991. https://doi.org/10.1016/j.contraception.2023.109991

United Way of the National Capital Area. (2023). *Vacant homes vs. homelessness in cities around the U.S.* https://unitedwaynca.org/blog/vacant-homes-vs-homelessness-by-city/

World Health Organization. (2010). *Framework for action on interprofessional education & collaborative practice.* Health Professions Networks Nursing & Midwifery Human Resources for Health. https://www.who.int/publications/i/item/framework-for-action-on-interprofessional-education-collaborative-practice

Zicka, J. L., & Reeb, R. N. (2021). The impact of service-oriented undergraduate research on an ongoing participatory community action research project at homeless shelters. *Journal of the Scholarship of Teaching and Learning*, *21*(1), 21–24. https://doi.org/10.14434/josotl.v21i1.30549

Zeien, J., Hanna, J., Yee, S., De Castro, A., Puracan, J., Ervin, B., Kang, P., Harrell, S., & Hartmark-Hill, J. (2023). Education without walls: Using a street medicine program to provide real-world interprofessional learning. *Journal of Interprofessional Care*, *37*(1), 91–99. https://doi.org/10.1080/13561820.2021.2016663