

RESEARCH ARTICLE

# Educational tools to dismantle disparities by addressing social determinants of health

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## Keywords

Health disparity  
Patient-centred care  
Social determinant of health  
Socio-ecological model

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## Abstract

**Background:** Social determinants of health (SDOH) are personal, social, economic, and environmental factors that contribute to health disparities in the United States. **Objectives:** To develop educational interventions to teach and assess students' knowledge about health disparities using a SDOH framework, and design assessment methods to identify theory-based interventions to improve patient health outcomes. **Methods:** Educational tools utilising a SDOH framework were designed for students to learn about health disparities. A socio-ecological model allowed students to assess multi-level determinants of health and propose more effective interventions. Evidence-based questions were designed to address the health of a specified population. A case study allowed students to apply therapeutic knowledge and clinical interventions to improve patient health. **Results:** Exactly 44 students enrolled in three iterations of the course and completed pre- and post-surveys. Upon completion, students' perception of health disparities significantly increased. **Conclusion:** The SDOH model offers strategies for other pharmacy programs seeking to increase public health-related topics. Students can develop skills to directly apply to a current problem and then build theory to engage in problem-solving. This innovative approach utilising SDOH for pharmacy students positively impacted awareness and knowledge.

## Introduction

Social determinants of health (SDOH) are the multifaceted circumstances and non-medical factors in which people live, learn, work, and age, that impact health outcomes. Although the health profile of Americans has improved over time, health disparities persist (AHRQ, 2022). The urgency of addressing health disparities in the United States of America (USA) is evident by one of the overarching goals of "Healthy People 2030", which aims to "create social, physical, and economic environments that promote attaining the full potential for health and well-being for all" (Healthy People 2030, 2022). Evidence suggests that healthcare professionals may unknowingly contribute to the persistence of health disparities in the USA (Hall *et al.*, 2015). Consequently, it is not surprising that accrediting organisations are urging pharmacy programs to include health disparities in the curriculum

(ACPE, 2016). While some could argue that genetic factors account for differences in population health, SDOH is unarguably considered to be an important factor in the disparities of health outcomes observed in the USA.

Health disparities education can be approached from a variety of ways and perspectives. Research has shown that exposing students to issues affecting individuals and communities through a service-learning elective can change students' attitudes and perceptions about patients and their communities (Brown *et al.*, 2007). Vela and colleagues showed that a health disparities curriculum for incoming medical students using a combination of lectures, group discussions, and off-site visits to clinics, proves to be effective in improving students' knowledge and abilities to address disparities issues (Vela *et al.*, 2008). Comparatively, an elective course in cultural competence that uses guest speakers

representing different cultures and interactive health screenings with those cultures resulted in significant increases in cultural awareness, desire, knowledge, and encounters among students (Durand *et al.*, 2012). Although these approaches are effective at increasing students' understanding of health disparities, reproducing the courses presents a substantial barrier due to the availability of community sites and the significant coordination efforts required. While the term SDOH may commonly be regarded as factors that negatively influence a person's health, some may positively influence a person's health. Consequently, it is important to educate future pharmacists on ways to recognise not only the negative social and environmental factors but also the positive factors that may influence health. This study is built on prior work aiming to introduce students to the SDOH framework.

### **Impetus for change**

The integration of public health and social epidemiology into health professions education is imperative (White, 2013). Others have made recommendations to integrate public health in both the didactic and experiential coursework of health professions' curricula, in addition to increasing training opportunities in public health (Truong and Patterson, 2010; Palombi *et al.*, 2013; Diaz-Cruz, 2019). Future strategies to eliminate health disparities should focus on interventions targeting SDOH (Thornton *et al.*, 2016). Recognising the need for awareness and knowledge surrounding both the negative and positive social influencers of health, this article outlined the development of educational tools and assessments to address SDOH as part of a health disparities elective course.

All educational tools and assessments utilise the SDOH framework to educate students on the multifactorial complexities that may impact health disparities. The educational tools and assessments developed emphasise the impact of both negative and positive social and environmental influencers on health. This approach allowed students to develop skills to equip them to be knowledgeable change agents at multiple levels (from individual interventions to public policy) versus simply becoming more culturally sensitive. Ultimately, it is hoped that these educational tools will empower learners to become pharmacists that have the skill set to dismantle health disparities.

Song and colleagues provided an all-inclusive model for teaching students about SDOH similar to the elective course in which these projects were used (Song *et al.*, 2018). Furthermore, this study relied on the structural competency model to have students understand the

role of SDOH in the development of health disparities (Neff *et al.*, 2020). This study contributed to previous work focusing on how to utilise a public health framework to equip students with tools to identify the role of SDOH in health outcomes to become more effective patient advocates (McDonald *et al.*, 2015; Marsh *et al.*, 2019).

The objectives of this study were to develop educational interventions and assessments to teach students about health disparities using a SDOH framework and to design assessment methods to teach students how to identify theory-based interventions to improve patient health outcomes and assess students' knowledge and awareness about health disparities in the USA.

## **Methods**

### **Design of a health disparities course**

A health disparities elective course was proposed at Belmont University College of Pharmacy, an accredited four-year pharmacy program in Nashville, TN. The course adopted the framework of SDOH. With this framework, the course's main objectives were centred on the ability to discuss the impact of culture on health, describe how SDOH impact health outcomes, determine how bias and stereotyping can affect interaction with patients, and critically discuss effective interventions to reduce health disparities, among others. The course used a variety of teaching modalities including traditional lecture instruction, documentary films, group discussion, panel discussion, and in-class activities. Documentary films were used to reinforce course material. The films were selected from the seven-part documentary series "*Unnatural causes: is inequality making us sick?*", (Adelman, 2009). A panel discussion was used to provide students with an opportunity to engage in open and honest conversations with members of marginalised communities to gain enhanced insight into the needs of a particular population.

Various avenues were available for students to demonstrate achievement of course outcomes. In addition to attendance and in-class participation, reflection papers and three strategic projects (described below) allowed students to actively utilise the social determinants framework of the course. Students were assigned an attendance grade reflecting any penalties due to tardiness or unexcused absences, which contributed five per cent towards their final grade. Students were assigned a participation grade reflecting their active engagement in course activities and class discussion by asking questions and/or making

informative comments, which contributed five per cent towards their final grade.

### **Reflection papers**

Reflection papers were used to assess the application of theoretical concepts through critical thinking and creativity based on lecture material and four documentary films from the seven-part documentary series *"Unnatural causes: Is inequality making us sick?"*. Students were asked to write four critical reflections throughout the semester. The first reflection was based on the segment titled *"When the Bough Breaks"* using the following question to reflect on the effect of racism on health disparities: Critically reflect on the idea of racism as a risk factor for poor health and provide examples that will support your response. The second reflection was based on the segment titled: *"In Sickness and In Wealth"* using the following question to reflect on the effect of socioeconomic status on health disparities: *"Explain why someone's zip code could be considered a pathogen and suggest possible causes for why this is the case"*. The third reflection was based on the segment titled: *"Place Matters"* using the following question to reflect on the effect of stress on health disparities: *"Create a person's profile whose health you believe would be highly impacted by allostatic load and use his/her/their life circumstances to justify your argument"*. The fourth reflection was based on the segment titled: *"Becoming American"* using the following question to reflect on the effect of migration and acculturation on health disparities: *"Identify differences in culture between USA-born Americans and Mexican immigrants and explain how the process of acculturation would benefit the health of both groups by providing examples to support your argument"*. This reflection question was chosen due to Hispanic immigrants to the USA reporting lower physical and mental health concerns than USA-born Americans (Hernandez *et al.*, 2022). There was neither a right nor a wrong answer to the reflections. Reflection papers were scored based on the depth of reflection (based on the theories, concepts, and/or strategies presented in the documentary and/or course materials; insightful and well-supported viewpoints and interpretations; clear and detailed examples as applicable), evidence and practice (based on strong evidence of synthesis of ideas presented and insights gained throughout the entire course), and inclusion of required components (based on the inclusion of all components as stated in the assigned question). Each of the four reflection papers contributed five per cent. Reflection papers contributed 20% towards the final course grade.

### **Socio-ecological model assignment**

The socio-ecological model (SEM) assignment allowed students to identify theory-based interventions to improve both individual and population health in alignment with this theoretical model (Fielding *et al.*, 2010). The goal of this educational tool and assessment was to describe a public health problem, assess multi-level determinants of health, and propose more effective pharmacist-led interventions. Students were instructed to identify a health problem in a specific patient population of their interest. Once approved by the instructor, students were to define the problem, build and examine the SEM as it applies to the stated problem, hypothesise a fundamental cause of the health problem, and propose an intervention appropriate from a pharmacist based on the hypothesised cause. This assignment allowed students to use all five hierarchical steps of the model (individual, interpersonal, community, organisational, and policy) in direct application to a health disparity. The major components and criteria addressed in the socio-ecological model of health assignment with a percentage of grade distribution per criteria included in the evaluating rubric can be found in Table I. A specific example of how to build and examine a SEM when addressing the disproportionate human immunodeficiency virus (HIV) incidence in young African American men who have sex with men in the Southeastern United States as a health problem can be found in Figure 1, including both negative and positive influencers of health. The SEM assignment contributed 20% towards the final course grade.

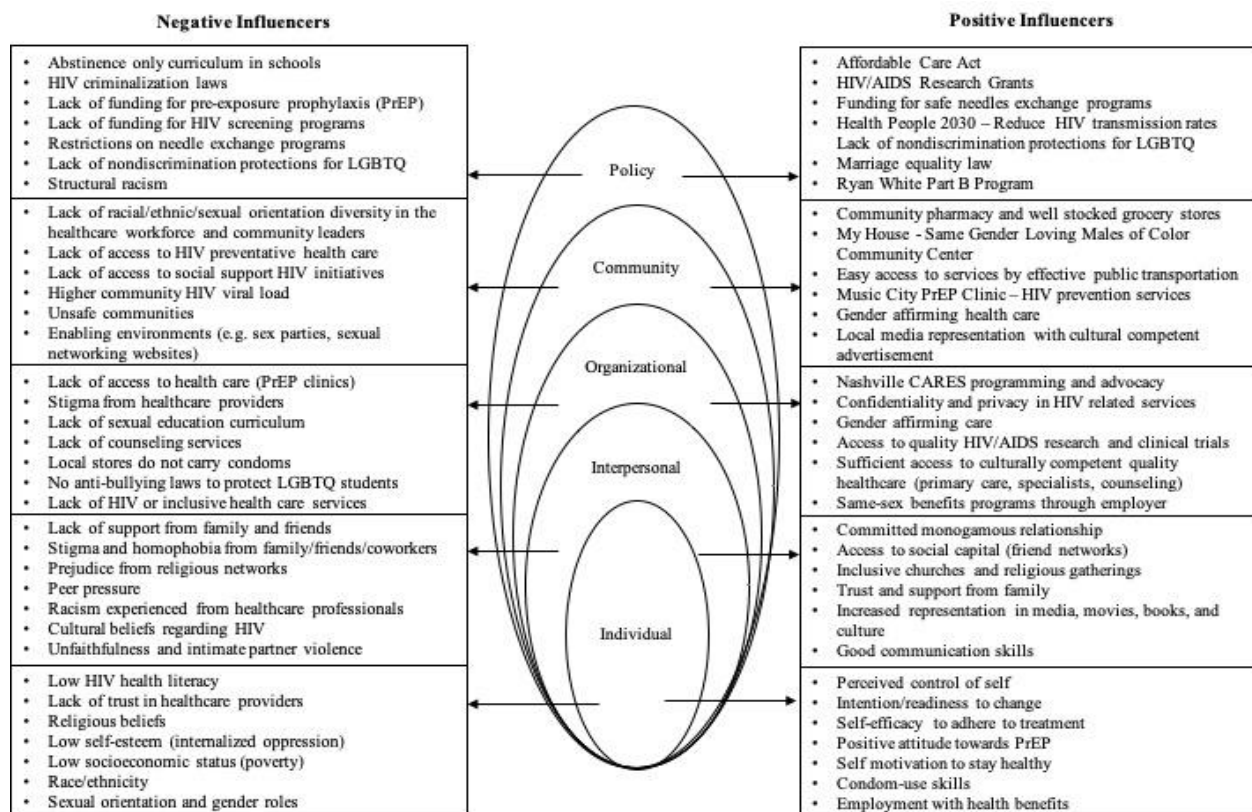
### **Socio-demographical analysis**

A socio-demographic analysis project was introduced to allow students the opportunity to use epidemiological data to develop questions, hypotheses, and policy recommendations intended to address the health of a population in a specific geographical area. The goal of this educational tool and assessment was to develop evidence-based questions, hypotheses, and/or policy recommendations intended to address the health of a population in a specific geographical area using epidemiological data. Projects were evaluated based on student ability to identify a county or zip code within the USA, describe the patient population demographics, assess social and economic factors, analyse physical and environmental conditions, examine health indicators, predict possible causes for health outcomes, and propose interventions.

**Table I: Components and criteria addressed in the socio-ecological model of health with the percentage of grade distribution per evaluating rubric**

Component	Criteria	Percentage of grade (%)
Define a health outcome problem	<ul style="list-style-type: none"> <li>• Health outcome problem is clearly stated.</li> <li>• Specific patient population affected is identified.</li> <li>• Reliable epidemiological data is used to justify the problem.</li> </ul>	10
Build a SEM	<ul style="list-style-type: none"> <li>• Model is depicted in a table or figure format.</li> <li>• At least five influencers of health are presented for each of the five levels.</li> <li>• Model is cohesive and easy to follow.</li> <li>• Model presented in the context of professional pharmacy.</li> </ul>	10
Examine the SEM	<ul style="list-style-type: none"> <li>• Multi-faceted factors that affect health outcomes are addressed thoroughly for all five levels of the SEM.</li> <li>• Multi-faceted factors reflect the role of race/ethnicity, culture, socioeconomic status, education, neighbourhood and physical environment, health care system, and/or other SDOH on health outcomes.</li> <li>• Model correctly identifies factors at the appropriate level.</li> <li>• Content is correct and supported by primary literature.</li> </ul>	30
Hypothesise a fundamental cause	<ul style="list-style-type: none"> <li>• Hypothesis is clearly stated and justified.</li> <li>• It is focused on a single cause at one level.</li> <li>• Student demonstrates strong evidence of understanding of the problem.</li> <li>• Interpretations drawn from the model are insightful and well-supported.</li> </ul>	20
Propose an intervention based on the hypothesised fundamental cause	<ul style="list-style-type: none"> <li>• Proposed evidence-based intervention demonstrates an in-depth self-reflection of the health outcome problem based on the SEM.</li> <li>• The proposal clearly defines the role of the pharmacist.</li> <li>• The intervention is realistic and feasible in the setting selected.</li> <li>• The intervention's possible effectiveness is evident.</li> </ul>	30

SEM = Socio-ecological model, SDOH = Social determinants of health



PrEP = Pre-exposure prophylaxis, LGBTQ = lesbian, gay, bisexual, transgender, queer, HIV = human immunodeficiency virus.

**Figure 1: Example of a socio-ecological model of health addressing the disproportionate human immunodeficiency virus (HIV) incidence in young African American men who have sex with men in the Southeastern United States as a health problem (Adapted from students' submissions).**

The major components and criteria addressed in the socio-demographical analysis project with the percentage of grade distribution per criteria included in the evaluating rubric can be found in Table II. This project encouraged students to learn about the health dynamics of the communities in which they may eventually practice. Though a rubric was provided, students were permitted to decide the project format, with creativity highly encouraged. Maps, tables,

graphs, text, or any other method could be utilised to present the data. Students were given two weeks to work on the project individually and submit a draft for assessment and feedback. The final analysis was due a week later for grading. Students were encouraged to use resources discussed in class (including free web-based platforms and databases) and others as needed. The socio-demographic analysis project contributed 30% towards the final course grade.

**Table II: Components and criteria addressed in the socio-demographic analysis project with the percentage of grade distribution per evaluating rubric**

Component	Criteria	Percentage of grade (%)
Identify a USA county	<ul style="list-style-type: none"> <li>Identify a US county (or zip code).</li> <li>Explain the reason for selecting it.</li> </ul>	5
Describe the demographics	<ul style="list-style-type: none"> <li>Describe the demographics of the population in the county by race/ethnicity, gender, age, migration patterns, citizenship status, etc.</li> </ul>	15
Assess social & economic factors	<ul style="list-style-type: none"> <li>Assess social factors in the county by social support, teen pregnancy rates, violent crime, and others.</li> <li>Assess economic factors by education, literacy levels, income, poverty rates, unemployment rates, and other economic measures.</li> </ul>	15
Analyse physical and environmental conditions	<ul style="list-style-type: none"> <li>Analyse the physical conditions of the county by food access (grocery stores, convenience stores), housing, schools (colleges), recreation and fitness facilities, public transportation, and other physical burdens (liquor stores, check cashing establishments, fast food restaurants, etc.).</li> <li>Analyse the environmental conditions of the county by air quality, water quality, and other environmental burdens.</li> </ul>	15
Examine health indicators	<ul style="list-style-type: none"> <li>Examine health indicators for the county and compare them with those of the state using the following categories: <ul style="list-style-type: none"> <li>Health literacy</li> <li>Health care (both access (including pharmacy services) and quality)</li> <li>Health behaviours (focus on a maximum of five)</li> <li>Poor health outcomes (focus on a maximum of five)</li> </ul> </li> </ul>	30
Propose an intervention	<ul style="list-style-type: none"> <li>Propose one intervention that could be implemented in a community pharmacy that could improve health outcomes based on the socio-demographic analysis.</li> <li>Focus on one health indicator (behaviour or poor health outcome).</li> <li>Explain why this intervention has the potential to be more effective than what is currently common practice at community pharmacies.</li> </ul>	20

USA = United States of America

### Case study project

A patient case scenario was used to help students realise the complexity of developing a pharmaceutical care plan. The goal of this educational tool and assessment was to apply therapeutic knowledge, assess social resources, and clinical interventions to improve patient health outcomes by incorporating the complexities of SDOH. Students were encouraged to use all the provided information and assess the overall situation of an 80-year-old White female brought to the emergency room after a fall. The scenario provides sociodemographic information about the patient including home address, home setting, income, level of

education, National Assessment of Adult Literacy (NAAL) score, Adult Literacy and Lifeskills Survey Literacy (ALL) and numeracy scores. The scenario also provided past medical history, social history, family history, list of medications, immunisation history, physical findings, and laboratory results (case study available upon request). Students were encouraged to apply knowledge gained from this course and other courses in the pharmacy curriculum to create a pharmacist-led patient-centred care management plan. The major components and criteria addressed in the case study project with the percentage of grade distribution per criteria included in the evaluating rubric can be found in Table III. Students were given

one week to work on the case study project individually and submit a draft for assessment and feedback. The final project was due a week later for grading. While each student worked on this project individually, the

case study was discussed as a group on the last day of class in the semester. The case study project contributed 20% towards the final course grade.

**Table III: Components and criteria addressed in the case study project with the percentage of grade distribution per evaluating rubric**

Component	Criteria	Percentage of grade (%)
Identify barriers to healthy living	<ul style="list-style-type: none"> <li>Identify barriers that could be removed to help the patient live a healthier lifestyle</li> <li>Propose pharmacist-led strategies to assist in removing the identified barriers</li> </ul>	20
Examine negative influencers of health	<ul style="list-style-type: none"> <li>Identify factors that negatively influence health in the following domains: economic stability, educational attainment, neighbourhood and built environment, social and community context, and healthcare access and quality</li> <li>Assess how the identified factors negatively impact the patient's engagement with the healthcare system</li> </ul>	15
Examine positive influencers of health	<ul style="list-style-type: none"> <li>Identify factors that positively influence health in the following domains: economic stability, educational attainment, neighbourhood and built environment, social and community context, and healthcare access and quality</li> <li>Assess how the identified factors positively impact the patient's engagement with the healthcare system</li> </ul>	15
Assess which health risk factors are modifiable	<ul style="list-style-type: none"> <li>Critically analyse the social history, family history, primary medical history, and medications/immunisation history and identify which health risk factors are modifiable</li> </ul>	15
Propose a pharmacist-led patient-centred care management plan	<ul style="list-style-type: none"> <li>Create a patient care plan that best meets the needs using both subjective and objective information from the case</li> <li>Design a pharmacist-led patient education plan</li> <li>Recommend a monitoring plan for both efficacy and safety</li> </ul>	25
Critically reflect on society's role	<ul style="list-style-type: none"> <li>Critically reflect on society's role in perpetuating health disparities</li> <li>Debate on the role of individual responsibility, ethics, human rights principles, and structural discrimination in health disparities</li> </ul>	10

SDOH = Social determinants of health

A web-based anonymous and optional survey pre- and post-course completion was developed to assess changes in knowledge and awareness among course participants. A ten-minute survey utilised a 5-point Likert scale and was administered using Qualtrics (Qualtrics, Provo, UT). The survey was granted exempt status by the Institutional Review Board. Non-parametric Mann-Whitney U tests using IBM SPSS Statistics 21.0 (Armonk, NY: IBM Corp) were used to compare the means of each of the questions assessing students' agreement with a particular statement.

## Results

Overall, a response rate of 100% (44 students) was observed for the pre- and post-course survey over three iterations of the course. The rank distribution for the number one reason for why students are taking this elective course was equal between I am interested in

the subject (40.9%) and gaining a deeper understanding of the subject (40.9%). Results from an open-ended question asking students what they would like to get out of this course showed four major themes including the role that pharmacists play in health disparities, increasing cultural sensitivity/competency, learning how to communicate with patients more effectively and learning better ways to close the gaps in health disparities. Survey results showed that students' perception of knowledge about health disparities in the USA significantly increased ( $p < 0.001$ ) and that students' awareness about health disparities in the USA significantly increased ( $p < 0.001$ ) (Table IV). Students reported strong agreement with having higher levels of perceived knowledge upon completion of the course. Furthermore, students strongly agreed to have much higher levels of perceived knowledge about being able to recognise the SDOH that affects access to quality care and identify health policies that affect access (Table IV). While students agreed to be aware of the importance of cultural sensitivity in health care

providers, this elective significantly increased students' awareness about strategies and techniques used to counteract unconscious prejudice and stereotyping. Ultimately, this course provided students with the

awareness of strategies and techniques used to increase communication and understanding with patients from a culture other than their own (Table IV).

**Table IV: Pharmacy student's perception of knowledge and awareness about health disparities in the USA<sup>a</sup>**

	Pre-course Mean (SD)	Post-course Mean (SD)	p-value
<b>Knowledge Statement</b>			
I am able to define culture	3.05 (0.30)	3.64 (0.49)	<0.001
I am able to discuss health disparities	2.91 (0.64)	3.84 (0.37)	<0.001
I am able to discuss the difference between race and ethnicity	2.84 (0.71)	3.57 (0.50)	<0.001
I am able to identify health policies that affect access to care	2.34 (0.64)	3.66 (0.48)	<0.001
I am able to discuss the effect of socioeconomic status on health	3.07 (0.66)	3.86 (0.35)	<0.001
I am able to explain how education affects health	3.25 (0.58)	3.86 (0.34)	<0.001
I am able to describe the mechanisms by which chronic stress affects health	2.82 (0.69)	3.77 (0.42)	<0.001
I am able to recognise the social determinants of health that affect access to quality care	2.84 (0.61)	3.75 (0.44)	<0.001
I am able to describe reasons for low literacy skills	2.86 (0.63)	3.72 (0.45)	<0.001
I am able to define stereotype threat	2.41 (0.82)	3.57 (0.50)	<0.001
I am able to list factors that increase stereotype usage	2.52 (0.79)	3.64 (0.49)	<0.001
I am able to explain how morality can influence response to illness	2.77 (0.71)	3.75 (0.44)	<0.001
I am able to explain the difference between cultural competency and cultural sensitivity	2.72 (0.73)	3.68 (0.47)	<0.001
I am able to critically discuss effective interventions and strategies to reduce health disparities	2.27 (0.79)	3.68 (0.47)	<0.001
<b>Awareness Statement</b>			
I am aware of the impact of culture on health	3.09 (0.52)	3.66 (0.48)	<0.001
I am aware of specific examples of health disparities in the USA	2.86 (0.55)	3.77 (0.42)	<0.001
I am aware of the mechanisms by which racism can impact health	2.91 (0.60)	3.77 (0.42)	<0.001
I am aware of the historical and political events that contributed to health disparities	2.59 (0.69)	3.66 (0.53)	<0.001
I am aware of the gap that socioeconomic disparities have created in the USA	2.95 (0.61)	3.75 (0.44)	<0.001
I am aware of the relationship between stress and health	3.18 (0.50)	3.80 (0.41)	<0.001
I am aware of the mechanisms by which segregation can impact health	2.95 (0.64)	3.70 (0.51)	<0.001
I am aware of the impact that migration and acculturation could have on health outcomes	2.77 (0.60)	3.73 (0.45)	<0.001
I am aware of the impact of literacy on health outcomes	3.25 (0.53)	3.75 (0.44)	<0.001
I am aware of the strategies and techniques used to increase communication and understanding with patients from a culture other than my own	2.68 (0.64)	3.68 (0.47)	<0.001
I am aware of the strategies used to counteract unconscious prejudice and stereotyping	2.36 (0.61)	3.64 (0.49)	<0.001
I am aware of the potential effects that biases and stereotyping could have on healthcare delivery	2.98 (0.50)	3.75 (0.44)	<0.001
I am aware of the importance of cultural competence in healthcare providers	3.20 (0.55)	3.75 (0.44)	<0.001
I am aware of the role that cultural beliefs and practices play in health and wellness care plans	3.02 (0.59)	3.75 (0.44)	<0.001

<sup>a</sup> Rating scale: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree  
 USA = United States of America, SD = standard deviation

The educational tools and assessments utilised in this elective course adopted an approach that aims to teach students SDOH as a method to understand the intersectionality of a patient's racial, social, and cultural backgrounds (including but not limited to beliefs, behaviours, ideas, language, religion, cuisine) and the

way these facets impact health. These tools provided students with a foundation on which to develop a patient-centred care management plan tailored to the individual, based on both medical and non-medical influencers of health. Utilising evidence-based data to educate via SDOH permitted a more accurate analysis

of a patient's situation versus allowing students to draw conclusions based on personal experience and potentially erroneous assumptions.

## Discussion

In the changing landscape of healthcare, pharmacists continue to be one of the most accessible healthcare professionals to patients in the community. As the USA continues to become increasingly diverse with the associated challenges/opportunities therein, it has been and will continue to be, paramount that pharmacy programs prepare students to work with diverse patient populations. To ensure that health disparities are not exacerbated by these healthcare professionals, course offerings must provide students with educational tools to analyse and understand the factors that inform inequalities in health outcomes. While cultural sensitivity is a step in the right direction, it is insufficient to eliminate health disparities (Powell, 2016). A SDOH framework is a cognitively accessible approach that allows the learner to analyse the possible influencers on health disparities. Moreover, by understanding potential causes, a learner can begin to understand what must occur to change the status quo to ultimately dismantle the disparity.

The implementation of this elective course generated an opportunity for students to enhance their knowledge and awareness about health disparities in the USA. Moreover, delivering this content within the framework of SDOH proved to be an exceptional approach to health disparities education. Before the course, students did not feel knowledgeable about being able to discuss health disparities, identify health policies that affect access to care, recognise the social determinants of health that affect access to quality care, list factors that increase stereotype threat, or critically discuss effective interventions and strategies to reduce health disparities. Furthermore, students did not feel as if they were aware of specific examples of health disparities in the USA, strategies and techniques used to increase communication and understanding with patients from a culture other than their own, and strategies used to counteract unconscious prejudice and stereotyping. Our data suggested that upon completion of this course, students felt significantly more confident in strategies to improve their interaction with patients from cultures different from their own.

### **Exploration of educational approach impact**

The American Public Health Association stated its desired action to help pharmacy expertise support public health efforts by the inclusion of public health concepts

in the curricula of schools of pharmacy and the influx of more pharmacists trained in public health (American Public Health Association Policy 200614, 2006). A distinctive curricular model implemented in this elective course was the use of the social determinants framework through a public health lens. It challenged students to take a holistic approach to individual patient health care by utilising the socio-ecological approach to health, which considers the individual, interpersonal interactions, community, organisations, and policies. Also unique to our instructional model was the use of a socio-demographical analysis, which allowed students to assess the needs of their community and propose targeted interventions at the population health level. Both of these assessment tools proved to be both valuable and functional instruments for assessing students' knowledge and awareness of their role in eliminating health disparities. The development of a case study written through the lens of SDOH provided student pharmacists with the opportunity to create a patient-centred care management plan that prioritises the individual patient's unique needs and specific desired health outcomes.

This pedagogical model of instruction delivers an easy-to-reproduce model for health disparities education that fits the needs of a variety of programs while circumventing the need to alter the curricular structure. The educational tools and assessments discussed here allow other pharmacy programs to incorporate effective instructional strategies into existing coursework. Moreover, these tools provide an opportunity for advocacy and action and move away from a service-learning model, which is a positive step for pharmacy education in the quest to reduce health disparities (Thornton *et al.*, 2016). Student pharmacists would have the opportunity to directly apply theory to a current problem and then engage in problem-solving strategies that are practical and feasible. These projects take the sometimes-ephemeral notions of health inequality and give the problem a concrete example with critical analysis. Furthermore, since our curricular model did not use service learning as the instructional strategy, there was little required in terms of coordination efforts with community sites.

### **Limitations**

Our approach was not without limitations. The instructional method had as a limitation the lack of student-patient interaction assessment in clinical settings. Documentary films and the participation of panellists representing different communities were incorporated to help students put faces and voices to health disparities. Additionally, elective courses are taken during the didactic portion of the curriculum, and it is expected students will be able to utilise their learning



once they begin their full-time experiential coursework in the fourth year of the program. Future iterations of the elective course can involve the inclusion of a course-sponsored immersion opportunity to allow students to interact with underserved patient populations. Students were asked to actively engage in course activities and discussions as reflected by asking questions or making informative comments, which contributed to five per cent of their final grade. A limitation to this approach could be the impact on the overall course grade for students who may not be comfortable sharing with the rest of the class. This was circumvented by allowing students to submit their questions or comments via email to the instructor. The submitted questions and comments were addressed during the next class period with the rest of the class without having to disclose the identity of the student who submitted it.

### Implications for practice

It has been established that social determinants greatly impact health disparities and that health disparities are preventable. Consequently, it is imperative that pharmacy programs continue to explore instructional approaches for developing future healthcare professionals equipped to provide patient-centred care, population-based care, and advocate for all patients. The main purpose of this model of education was to increase both knowledge and awareness about health disparities in the USA. The elective course built with the framework of SDOH proved to be an effective instructional method that provided an array of relevant subjects and assessment methods, which can be implemented by other programs to promote learning about health disparities. As the role of pharmacists continues to evolve by including more public health services, so does our role as educators to help raise awareness about the impact of SDOH on patient health outcomes.

### Conclusion

This study offered an innovative approach to teaching health disparities to pharmacy students utilising the SDOH framework. While cultural sensitivity and awareness are important components to initiate the journey of cultural competence and health justice, a more in-depth study is needed for the future healthcare professional to feel empowered to effectuate change. The SDOH framework allows students to identify and explore both negative and positive social and environmental influencers on health outcome disparities. Once these complexities are explored, students can begin to think about larger avenues of change. Once students earn their degrees and hopefully

become leaders in their profession, they will be able to have a wide-ranging impact grounded in the knowledge they gained as part of their education.

### Conflict of interest

The authors declare no conflict of interest.

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