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**Authors**
Hsia, Stephanie L
Landsfeld, Aubrey
Lam, Kelly
et al.

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1      Implementation and Evaluation of a 10-Week Health Equity Curriculum for Pharmacy Students

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3    Stephanie L. Hsia, Pharm.D.

4    Department of Clinical Pharmacy, University of California, San Francisco

5    Stephanie.hsia@ucsf.edu (Corresponding Author)

6    435 China Basin St, Unit 527, San Francisco, CA

7    Phone: (626) 372-2801

8

9    Aubrey Landsfeld, B. Mus.

10   University of California, San Francisco School of Pharmacy

11   Aubrey.landsfeld@ucsf.edu

12   Phone: (305) 619-8219

13

14   Kelly Lam, B.S.

15   University of California, San Francisco School of Pharmacy

16   Kelly.lam@ucsf.edu

17   Phone: (626) 731-3158

18

19   Rupa Lalchandani Tuan, Ph.D.

20   Department of Cellular and Molecular Pharmacology, University of California, San Francisco

21   Rupa.tuan@ucsf.edu

22   Phone: (916) 606-2356

23

## ABSTRACT

**Objective.** To describe a health equity curriculum created for pharmacy students and evaluate students' perceptions and structural competency after completion of the curriculum.

**Methods.** A health equity curriculum (HEC) based on transformative learning and structural competency frameworks was implemented as a 10-week mandatory component of the pass-no pass neuropsychiatric theme for second-year pharmacy students. Each week, students reviewed materials around a neuropsychiatric-related health equity topic and responded to discussion prompts through asynchronous forums or synchronous Zoom discussions. The HEC was evaluated through assessment of structural competency through a validated instrument (SCI), an objective structured clinical examination (OSCE), and a questionnaire.

**Results.** All enrolled second-year pharmacy students (n=124) participated in the HEC. Of the 75 (68%) students who completed the SCI, 46 (61%) were able to identify structural determinants of health, explain how structures contribute to health disparities, or design structural interventions. Ninety-six (77%) students were able to address their OSCE standardized patient's mistrust in the healthcare system. Thematic analysis of student comments elucidated three themes—allyship, peer connection, and self-awareness. Students rated asynchronous discussion forums as significantly less effective than Zoom discussions and patient cases for achieving curricular objectives.

**Conclusion.** A remote, mandatory, blended health equity curriculum demonstrated an effective model for social justice-oriented education. From our experience, a curriculum spread throughout the didactic curriculum with a blended approach is an effective way to incorporate health equity conversations into existing programs and could be an important step in training student pharmacists to be advocates for social justice.

## INTRODUCTION

Health disparities are preventable factors that exist across racial and ethnic groups and obstruct individuals from achieving optimal health outcomes.[1] Implicit biases of healthcare providers have been shown to affect healthcare outcomes of minority patients and are likely a significant contributor to health disparities.[2,3] The Accreditation Council for Pharmacy Education (ACPE) and Center for the Advancement of Pharmacy Education (CAPE) require that pharmacy students be able to "recognize social determinants of health to diminish disparities and inequities in access to quality care," but provide little to no guidance on how to do so.[4,5] With the continuing racial injustices that have been perpetuated and highlighted by the COVID-19 pandemic, there has been a long overdue call to educate pharmacists to be advocates for social justice.[6]

Most of the literature in pharmacy education around health disparities has centered on cultural competency or cultural humility, which can promote categorization of patients into groups and minimize the importance of other social and structural determinants of health.[7,8] A new concept, structural competency, provides a framework for teaching students about structural causes of health disparities.[9] The framework consists of five skill sets: recognizing structures that shape clinical interactions, developing extra-clinical language of structure, rearticulating "cultural" presentations in structural terms, observing and imagining structural interventions, and developing structural humility.[9] Structural competency has been implemented in some medical and nursing curricula, but Avant ND and colleague's study is the only example of a structural competency curriculum in pharmacy students.[10,11,11–13]

In order to promote structural competency in pharmacy students, we piloted a health equity curriculum (HEC) at the University of California, San Francisco (UCSF) School of Pharmacy based on Sukhera et al's transformative learning framework for reducing implicit bias in healthcare providers.[14] Sukhera et al's framework describes a cycle of a disorienting experience, critical reflection, acquiring skills, and role

1 modeling new behavior through sharing and dialogue with peers to reduce implicit bias.[15] As a

2 consequence of the COVID-19 pandemic, this curriculum was conducted completely remotely. The

3 purpose of the curriculum was to teach students to identify and recognize structural causes of health

4 disparities, design interventions to reduce structural causes, and to engage in equitable, civil, and

5 compassionate discussions about systemic racism and implicit biases. The objective of this study was to

6 describe student perceptions of the HEC at UCSF, to determine which activities of the curriculum were

7 most effective, and to evaluate students' structural competency after completion of the curriculum.

8

9 **METHODS**

10 **Curriculum Design**

11 The HEC was a 10-week mandatory component of the existing pass-no pass neuropsychiatric theme for

12 second-year pharmacy students and consisted of approximately one to two hours of student work per

13 week. The neuropsychiatric theme was chosen for the HEC as this was the longest theme in the didactic

14 curriculum and directed by the two faculty leading the HEC. To promote a safe space and comradery in

15 the remote environment, the students were split into 21 longitudinal health equity groups of five to six

16 students that were evenly distributed across self-identified gender and ethnicity. To foster productive

17 discussions and provide timely feedback, faculty recruited 13 second-year students with experience in

18 facilitating peer small groups or with a vested interest in health equity topics to serve as small-group

19 facilitators. Additionally, five senior pharmacy students who were teaching assistants for the Applied

20 Patient Care Skills (APCS) course facilitated student small group discussions. Groups that were not

21 assigned to a student or teaching assistant facilitator were monitored by the faculty leads. Students and

22 facilitators could only access their own groups and, with the exception of the two faculty leads, other

23 UCSF faculty did not have access to these student groups.

24

The HEC utilized a blended learning model conducted in a remote environment.[16] There were three main components: didactic material, asynchronous online small group discussion, and small group synchronous Zoom (San Jose, CA) discussions. Most of the material and discussions were delivered and conducted asynchronously due to constraints on available synchronous time within the course schedule. The asynchronous material and discussions were housed on Collaborative Learning Environment (CLE), a component of Moodle v3.9.3 (West Pert, WA AUS). All videos were uploaded to and provided via Vialogues v2.1.5 (New York, NY), a platform which allows students to comment at timestamps on the video and reply to other student's comments. Given that this curriculum occurred during the neuropsychiatric theme, special care was given to identify topics related to health disparities in neurocognitive and psychiatric disorders. Activities and discussion prompts were designed utilizing Sukhera et al's transformative learning framework.[14] Table 1 describes the topics, materials, activities, and assignments of the curriculum.

For each week of didactic material, students were given discussion prompts and one to two students in each subgroup were responsible for leading the group discussion on the CLE form. The discussion prompts asked students to reflect on and apply concepts covered in the didactic materials to patient cases from their APCS course, which involved specific health disparities related to the content for that week. Each student was required to post at least one reply for each discussion topic. To allow the students to engage in health equity topics in real time, three synchronous Zoom discussions were held throughout the curriculum: one during the two-hour didactic introduction to the curriculum, a one-hour discussion at the halfway point of the course, and a two-hour reflection session at the end of the curriculum. The students also participated in an APCS session focused on responding to and addressing microaggressions and providing patient-centered care to a patient with structural barriers to health.

**Curriculum Evaluation**

1    This was a mixed methods study that was approved by the UCSF Institutional Review Board as exempt

2    (Study #20-32249). To evaluate students' structural competency, the authors created and validated an

3    instrument based on Metzl's five structural competency skillsets, heretofore referred to as the Structural

4    Competency Instrument (SCI).[11,17] Students were asked to complete the SCI at the end of the HEC. The

5    Rasch measurement model was utilized to examine instrument validity and standard setting for the

6    competency levels.[18,19] Wright maps and statistical analysis used to validate the instrument were

7    conducted in Berkeley Assessment System Software (Berkeley, CA). A copy of the SCI is available upon

8    request.

9

10   Students were surveyed on their perceptions of the curriculum via Qualtrics (Provo, UT) immediately

11   after completion of the course. The questionnaire included three open-ended prompts on what students

12   learned about themselves, what they learned from their peers, and what change they would make in the

13   future based on what they learned in the HEC. A thematic qualitative analysis was conducted on the

14   student comments. Two investigators (SH and RT) independently read one-third of the excerpts to

15   identify initial codes. The investigators then met to discuss codes and create an initial codebook. They

16   then independently coded all of the excerpts with the initial codebook and met to review coding, reconcile

17   differences, and discuss new/redundant codes. All coding and qualitative analysis of code patterns were

18   conducted in Dedoose (Manhattan Beach, CA). In the questionnaire, students also rated the effectiveness

19   on a Likert-type scale ranging from 1 (not at all effective) to 5 (extremely effective) of the CLE

20   discussions, Zoom discussions, APCS patient cases/sessions, and overall curriculum in their ability to 1)

21   reflect on and recognize their own biases, 2) discuss topics around health equity, 3) communicate with

22   and provide equitable care to all patients, and 4) design interventions to reduce health disparities. All

23   questionnaires which included at least one response to one of the items were included for analysis. An

24   Analysis of Variance (ANOVA) with post-hoc Bonferroni correction for multiple comparisons was

conducted to evaluate differences between curricular aspects and objectives. All questionnaire statistical

analyses were conducted in IBM SPSS Statistics v.26 (Armonk, NY).

To evaluate students' ability to apply health equity communication techniques, students participated in an

Objective Structured Clinical Examination (OSCE) at the end of the course. One of the OSCE cases

involved interacting with a patient with significant distrust in the healthcare system as a result of

structural factors (e.g., institutional racism, discrimination, access to healthcare). Students were evaluated

by trained standardized patients played by UCSF faculty or residents. Students were scored on whether

they were able to address the patient's concerns about the health care system with a dichotomous score

(yes/no). Students were also scored on ability to respond to patient's needs and feelings on a five-point

Likert-type scale with 1=unacceptable, 2=borderline, 3=acceptable, 4=strong, and 5=exceptional.

Descriptive statistics for both OSCE items were calculated in SPSS.

**RESULTS**

In total, 124 second-year pharmacy students participated in the health equity curriculum. One-hundred

and eleven students (90%) completed questionnaire demographic questions. Of these students, 58%

identified as Asian/Pacific Islander, 19% as White/Caucasian, 7% as Hispanic/Latino, 6% as multiracial,

4% as Other, and 3% as Black/African American. Of questionnaire respondents, 68% identified as

female, 24% as male, 1% as transgender female, and 1% as gender non-conforming.

The SCI was based on Metzl's Structural Foundations of Health instrument and redesigned using

Wilson's construct modeling approach to measure domains of structural competency.[17,18] The construct

map and SCI were refined through consultation with measurement experts at the University of California,

Berkeley. Utilizing the measurement model, a construct map was created mapping Metzl's structural

competency skillsets to levels of competency (Table 2). The SCI was initially piloted with the thirteen

1. student facilitators and produced a reliability of 0.55. The instrument was then further refined through

2. rewording of prompts and creation of items that more specifically targeted domains and demonstrated an

3. improved reliability of 0.79 and Spearman's rho of 0.81. Table 3 provides representative SCI items and

4. their corresponding structural competency domains. The thirteen student facilitators were excluded from

5. the SCI analysis given their strong interest, participation in the instrument pilot, and potential high

6. proficiency in structural competency. Of the 111 students surveyed, 75 (68%) of students completed the

7. SCI. Of these students, 13 (17%) were at Unaware, 16 (21%) were at Recognize Cultural, 21 (28%) were

8. at Recognize Structural, 16 (21%) were at Applying, and 9 (12%) were at Imagining levels (Table 2) at

9. the end of the health equity curriculum.

10.

11. After completion of the curriculum, 104 (84%) students provided responses on the questionnaire on what

12. they learned about themselves, from their peers, and what they would change as a result of the

13. curriculum. Three primary themes were identified across all three prompts—allyship, peer connection,

14. and self-awareness. The first theme, allyship, encompassed actions and approaches consistent with being

15. an ally for marginalized groups. This included being an ally in the context of patient care by advocating

16. on behalf of patients and providing equitable care. An additional subtheme under allyship was speaking

17. up or starting conversations around inequities. The second theme, peer connection, encompassed

18. connecting with peers through an appreciation of discussions, descriptions of shared experiences and

19. goals with classmates, and recognizing both similar and differing perspectives and viewpoints. The third

20. theme, self-awareness, included biases and a growth mindset. Students spoke of recognizing, evaluating,

21. and changing their own and others' biases. For growth mindset, students mentioned a desire to continue

22. learning, self-reflecting, and improving skills around health equity. Statements regarding providing

23. equitable care to patients (allyship) were often co-coded with biases, peer connection, and growth

24. mindset. Growth mindset was also often co-coded with biases. Table 4 provides descriptions of the

25. themes and subthemes and representative quotations from participants.

In the questionnaire, 101 (81%) of students ranked the effectiveness of three curricular aspects on their ability to reflect/recognize biases, discuss topics around health equity, communicate with/provide equitable care to patients, and design interventions to reduce health disparities (Table 5). On average, students rated the overall curriculum as very effective for reflecting/recognizing biases, discussing topics, and communicating with/providing care. Students also rated the overall curriculum as moderately to very effective for designing interventions ($p<.01$). For all three objectives, students rated CLE discussions as being significantly less effective than Zoom discussions and skills cases/practice ($p<.001$). There were no significant differences in the effectiveness of Zoom discussions and skills cases/practices across any objective ($p>.05$).

All 124 students participated in the OSCE at the end of the course. 96 students (77%) were able to address their standardized patient's concerns about the health care system through empathetic listening and eliciting the patient's perspective. The average student score on ability to respond to the patient's needs and feelings was $4.04 \pm 0.83$ out of a maximum score of 5, illustrating that, on average, students demonstrated "strong" communication skills in this area.

**DISCUSSION**

This curriculum builds upon social justice and structural competency curricula in medicine, nursing, and pharmacy literature.[10,11,17,20] The literature in health professions education primarily describes social justice/structural competency elective courses that were conducted in-person and contained a mix of discussion and traditional didactic lectures.[10,17,20] The HEC curriculum presents an innovative approach because it was integrated into an existing required course for all pharmacy students, delivered remotely, and largely driven by small-group peer learning. Another innovative aspect of this curriculum is the utilization of peer small group discussion to drive learning, which is a key component of Sukhera's

transformative learning and social justice frameworks.[8,15] This is the first curriculum we are aware of that utilizes these frameworks in pharmacy education in a remote learning environment.

At the end of the Health Equity Curriculum, 61% of students who completed the SCI were able to recognize structural determinants of health when presented with a patient case or health disparities. One limitation is that the SCI consisted of 14 open-ended response items, which may have contributed to survey fatigue resulting in a lower assessed structural competency rating. In addition, since students did not complete a validated structural competency instrument prior to the curriculum, comparisons could not be made between student competencies prior to and after the curriculum.

The identified themes in the student comments aligned with Sukhera et al's framework of transformative learning theory for recognizing and managing implicit bias.[14] Student comments regarding recognizing their own biases and a continued desire to self-reflect indicate a disorienting experience and critical reflection. Comments regarding providing equitable patient care and starting conversations around health equities align with the elements of acquiring skills and role modeling new behavior. Finally, many of these comments were in the context of peer discussion and dialogue, another key component of the framework. The growth mindset theme we identified further illustrates the transformative nature of this curriculum, prompting students to view their challenge of implicit biases as a lifelong process. Though only 12% of students scored into the Imagining level in the SCI, 77% of students were able to apply and demonstrate equitable patient-centered communication in a formal assessment (OSCE). This suggests that, though students may still require additional practice in imagining interventions, they have already begun to apply individual communication skills in addressing patients with structural determinants of health.

In terms of the different modalities utilized through this curriculum, students preferred live discussion and application to patient cases over the asynchronous discussion forums. Though they were still rated as moderately effective, the asynchronous discussions likely did not generate as much of a rich discourse or interaction as the synchronous discussions. Additionally, in order to track student participation, students were required to make their discussion posts by a certain time each week which may have led to their perceiving the discussions as an assignment instead of critically reflecting and generating discussion around the topic. Through this evaluation, we identified several areas for improvement. Though students expressed gratitude and interest in this topic, they felt overwhelmed at times with the workload of this curriculum on top of their didactic curriculum and extracurricular activities. This could have potentially led to less thoughtful engagement of the students. For future iterations, we plan to spread the curriculum across multiple courses/themes and provide a better balance between asynchronous and synchronous discussions. By doing so, this can reduce necessary in-class time in an already impacted curriculum and allow students to thoughtfully engage with the curriculum without feeling overwhelmed.

Limitations to our study include the lack of a pre- and post-comparison and a control group, and our specific student population which identified primarily as Asian/Pacific Islander and female. Given that this curriculum centers around individual biases and perspectives of marginalized and privileged groups, it may have a different impact in student populations with different demographics. Additionally, the assessments occurred mostly in the didactic setting. Though students did demonstrate equitable communication skills in their OSCE, this study did not evaluate whether students would utilize and apply structural competency to actual patient care. Future research should evaluate whether health equity curricular interventions impact students' ability to communicate with and provide care to real patients with structural determinants of health.

**CONCLUSION**

A blended health equity curriculum based on structural competency and transformative learning frameworks for recognizing and managing implicit bias was piloted remotely in the neuropsychiatric theme for second-year UCSF pharmacy students. Though this was a pilot, we believe that this approach to a health equity curriculum could be implemented at other institutions as it requires minimal in-class time. This curriculum also builds upon existing health professions literature by demonstrating an effective, remote, mandatory model for social justice-oriented education through peer dialogue. From our experience, a health equity curriculum spread throughout the didactic curriculum with a blended approach may be an effective way to incorporate health equity conversations into existing programs and could be an important step in training student pharmacists to be advocates for social justice.

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Table 1. Health Equity Curriculum Content

| Topic | Learning Materials | Example Discussion Prompts/Assignments |
|---|---|---|
| Introduction to Structural Competency and Intersectionality | • Two-hour synchronous Zoom lecture provided by faculty on structural competency concepts<br>   o Three 10-15 breakout sessions in Zoom small groups for setting ground rules and case discussion<br>• Model videos from faculty | • Establish 5-7 ground rules for your longitudinal small groups.<br>• Create and upload a short video reflecting on your background and personal experiences and how they may impact your view on race/ethnicity and privilege |
| Cultural and Structural Influences on Mental Health | • TED talk video on "Black Mental Health Matters"<br>• NPR clip "Asking Mom: 'Did You Know I was Depressed in High School?'"<br>• Skills patient case with Asian-American patient with depression with reluctance to engage in psychotherapy due to cultural beliefs | • How are these individual's experiences similar? How are they different? As you reflect on these two pieces, feel free to share examples in which have you seen institutional racism and cultural stigma impact access to mental health care.<br>• As a pharmacist, what can you do to address the social and cultural barriers experienced by your Skills patient, Timothy Nguyen? |
| Structural Stigma of Mental Health and LGBTQ Populations | • Pre-recorded lecture created by faculty on Structural Stigma<br>• Optional *The Atlantic* article on "Keeping the Mentally Incompetent from Voting"<br>• Skills patient case with self-identified lesbian patient with depression | • What structural stigma may your Skills patient, Samantha Smith, who identifies as lesbian, experience? How might that change if she lived in a state/community with high LBGTQI bias? As a pharmacist, what can you do to address the structural stigma experienced by your Skills patient, Samantha Smith? |
| Fostering Effective Discussions | • One-hour small group synchronous Zoom discussions | • Write down a situation you have experienced where it was difficult to address health equity. What makes you uncomfortable discussing health disparities and racism? When you feel uncomfortable, what assumptions and ideas underlie your discomfort? |
| Mental Health and Persons Experiencing Homelessness | • John Oliver video on Mental Health<br>• Optional *Case Studies in Social Medicine* article on medicalization and de-medicalization<br>• Skills patient case with homeless patient admitted for inpatient treatment of psychosis | • What are your own perceptions of individuals experiencing homelessness? Where do these perceptions come from?<br>• How might well-meaning pharmacists provide inequitable mental health care to minority and non-minority patients?<br>• Relate what you have learned from the John Oliver clip to your Skills/Conference patient, Arthur |
| Choose Your Own Adventure | • Student self-identified topics, materials, and prompts<br>• Examples: Transgender mental health, health inequities and chronic pain, health disparities during COVID-19, racial disparities in clinical trials | • In your groups, decide on two topics around Health Equity you want to explore further.<br>• Take one topic, find a good source (podcast, video, article, etc.) and create 1-2 prompts for that topic<br>• Give the source and prompt(s) to the other half of your group, and you will respond to the prompt(s) they have created for you. |

| Reflection and Action | • Two-hour facilitated small-group Zoom discussion<br>• Two-hour Zoom APCS session on how to respond to/address microaggressions and providing patient-centered care to patients with structural barriers to health | • Describe where and how you feel privileged or marginalized in patient care, health advocacy, and other (non-clinical)<br>• Describe an experience you've had in the Health Equity curriculum or around health equity in a pharmacy setting that challenged you and made you realize you have room for personal growth when it comes to providing equitable health care. What preconceived notions did your experience challenge? Where did these preconceived notions come from? How could these preconceived notions have resulted in inequitable care? How do you wrestle with this? What will you do as future pharmacists to address this? How will you stand up for your patients who are being marginalized? |
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APCS: Applied Patient Care Skills

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Table 2. Structural Competency Levels Assessed in Structural Competency Instrument

| | Structures that shape clinical interventions | Extraclinical language of structure | Structural rearticulation of cultural presentations |
|---|---|---|---|
| **Unaware** | Unable to identify structural determinants of health | Does not use extraclinical language | Unable to identify "cultural" determinants of health |
| **Recognizing** Cultural | | | Identifies "cultural" determinants of health |
| Structural | Identifies structural determinants of health | | |
| **Applying** | Explains how structures contribute to patient's specific health disparities | Uses extraclinical language correctly | Rearticulates a patient's specific cultural considerations as structural |
| | **Imagining structural interventions** | | |
| **Imagining** | Designs structural interventions on a policy/research level Designs structural interventions on a clinic/institutional or community level Designs structural interventions on an individual/interpersonal level | | |

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Table 3. Structural Competency Instrument (SCI) Items and Corresponding Structural Competency Domains

| Domain | Item |
|---|---|
| Extraclinical language of structure | Define structural violence. Provide an example of a patient who has experienced structural violence. Be specific in describing the situation. |
| Structures that shape clinical interventions Structural rearticulation of cultural presentations | According to the American College of Cardiology, rates of hypertension control are significantly lower in Hispanic adults (47.4%), non-Hispanic Asians (43.5%), and non-Hispanic Blacks (48.5%) compared to non-Hispanic whites (55.7%). What are possible cultural and structural causes for this disparity? Please explain your answer. |
| Structural rearticulation of cultural presentations | Imagine you are on your ambulatory care APPE in a Diabetes clinic. One of the clinic providers is providing a brief topic discussion on diabetes management and states "Hispanic patients are more likely to have uncontrolled diabetes because their diet typically consists of foods high in fat and calories such as tortillas and pork. They also hold lots of family celebrations which may involve social pressure to overeat." Do you agree with this statement? Why or why not? |
| Structures that shape clinical interventions Imagining structural interventions | MB, a 44-year-old man with chronic back pain, diabetes, hypertension, asthma presented to a Philadelphia free clinic with an acute exacerbation of back pain triggered by carrying heavy loads of trash at work. A premedical student acting as his health care advocate accompanied him.

MB was hesitant to seek health care because he had no health insurance and mistrusted institutions as a result of his extensive negative experiences with the criminal justice system in both his native Puerto Rico and the mainland US. He has a history of incarceration. He seemed nervous in the clinic which had no Latino staff and was located in a middle-class neighborhood far from his home. The advocate reassured him in Spanish that the doctor was trustworthy and urged him to speak frankly about his health problems, including his challenges in obtaining medication. MB reported that during recent back pain exacerbations he occasionally resorted to purchasing one or two 5-mg oxycodone tablets off the street on the block where he lived. The physician gave MB ibuprofen and a prescription for five 5-mg oxycodone tablets, enrolled him in the clinic's diabetes and hypertension programs, and scheduled a follow-up visit.

MB never filled the prescription and did not return to the clinic despite repeated attempts by the advocate both in person and over the phone. MB reported that his pain was tolerable and he was managing his diabetes, hypertension, and asthma with family members' medications.
Which THREE of the following factors are most important for explaining MB's presentation and outcome? Indicate the most important, second most important, and third most important factor.[a]

What might improve care and outcomes for MB and patients like MB and why? Be as specific as possible. |

[a]Factors: Access to healthcare, cultural background/beliefs, economic policies, gender bias, genetic predisposition, health delivery system, health insurance, health literacy, individual behaviors/lifestyle choices, individual or family income, institutional racism, medical/psychiatric history, medication adherence, physician bias, social policies, socioeconomic position, substance use

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Table 4. Representative quotations from student reflections on the health equity curriculum

| Theme | Sub-Themes | Participant Quotations |
|---|---|---|
| Allyship | Providing more equitable patient care | *"I learned that there is so much more to providing quality health care than just knowing disease states and medication guidelines. There is so much more that healthcare providers that do for the patient by understanding their backgrounds and treating them more comprehensively. In order to do that, I need to continuously reflect and work on my own biases so that they don't interfere with the quality of care the patient receives."* |
| | | *"I learned that I am still learning…about the barriers our patients are facing on a daily basis. I learned that I care a lot about achieving equitable access to care for my patients. I realized that the more I talked about the experiences marginalized people face on a daily basis, the more I learned that I care about challenging our system to make sure this doesn't happen in the future. I also learned that I need to challenge our system harder."* |
| | Starting conversations/ speaking up about inequities | *"Our words are so powerful and can have a huge impact. In terms of confrontation, even if the person doesn't register the information immediately, a part of the conversation will always stick with them. As HCP, we should also use our voices to advocate for those who can't advocate for themselves and speak up against these inequities. I also feel like this curriculum has forced me to go outside my comfort zone to talk about specific patient populations and issues that need to be addressed in our communities."* |
| | | *"I learned that I need to reflect more on uncomfortable situations to really grow and learn from them instead of brushing them off because they are uncomfortable. I learned that being able to talk, debrief, and reflect with others in a safe space is extremely valuable to everyones growth and development and getting rid of biases."* |
| Peer Connections | Shared experiences and goals | *"I learned that I share very similar sentiments with my classmates, and it's comforting hearing that I am not alone when faced with challenging situations regarding equity…I learned that my peers are understanding and how we genuinely want to make health care more equitable. My peers taught me different approaches to handling situations (such as asking for patient preference before we jump to our own conclusions) and it's okay that we don't have an answer to everything yet. Also, to give each other grace and time to process our thoughts/answers."* |
| | Recognize perspectives/ viewpoints | *"I learned that my peers are all have experiences that are similar to mine in some ways but also very different from my own. Hearing about those different experiences has allowed me to look outside of my own lens and to both learn from and empathize with the experiences of others in order to provide unbiased care."* |
| Self-Awareness | Recognizing, evaluating, and changing biases | *"I learned that I still have a lot to learn regarding my own biases and how that can affect interactions with people and patients…The most important thing is recognizing that every day a conscious decision must be made to unlearn the stereotypes, biases, and* |

|  | *stigmas that society has engrained and work to go against them."* |
| --- | --- |
|  | *"I was aware that I very privileged to begin with, but I did not really understand how that could affect access to healthcare as well. It made me think about my own advantages, about why it may not be accessible to patients in the US healthcare system, and about how I can as a pharmacist try to make changes in order to better patient experiences and access to equitable care."* |
| Growth mindset and being a lifelong learner | *"I've learned that I have privilege in many ways but I also belong to some minority groups, so it's important to reconcile both and be a lifelong learner about these issues. It's gonna take a lifetime to become completely unbiased so it's necessary to keep the conversation going."* |
|  | *"I will ask more questions, I will critically reflect more on experiences and conversations (especially mistakes and moments of weakness and moments of education from others), I will question my assumptions and judgements and biases and explore how to best navigate dismantling them, while doing this alongside others, in order to move toward deeper understanding and compassion and empathy. I will explore additional resources, learn my history, challenge my ideas and the ideas of others, and stay up to date on the state of the world and how to contribute to navigating toward growth and equity."* |

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Table 5. Student Rated Effectiveness of Curricular Aspects (N=101)

| | Effectiveness[a] in ability to | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Reflect and recognize biases | | Discuss topics around health equity | | Communicate with and provide equitable care to all patients | | Design interventions to reduce health disparities | |
| | M (SD) | $p$ value[b] | M (SD) | $p$ value[b] | M (SD) | $p$ value[b] | M (SD) | $p$ value[b] |
| Overall curriculum | 4.26 (0.76) | | 4.25 (0.70) | | 4.13 (0.81) | | 3.76 (0.99) | |
| Curricular aspect | | | | | | | | |
| CLE discussions | 3.31 (1.00) | | 3.37 (1.08) | | 3.07 (1.03) | | 2.99 (1.06) | |
| Zoom discussions | 4.27 (0.90) | < .001[cd] | 4.27 (0.90) | < .001[cd] | 4.30 (0.79) | < .001[cd] | 4.05 (0.90) | < .001[cd] |
| Skills patient cases/practice | 4.03 (0.89) | | 4.14 (0.87) | | 4.19 (0.76) | | 3.98 (0.92) | |

Abbreviations: CLE=Collaborative Learning Environment
[a]Effectiveness rated as 1 (not at all effective), 2 (slightly effective), 3 (moderately effective), 4 (very effective) , or 5 (extremely effective)
[b]Analysis of Variance (ANOVA) with Bonferroni correction was used to determine significant, defined as $p<.05$
[c]Significant difference in means between CLE discussions and Zoom discussions
[d]Significant difference in means between CLE discussions and skills patient cases/practice

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Appendix 1. Structural Competency Instrument (SCI)

1. Define structural violence.

2. Provide an example of a patient who has experienced structural violence. Be specific in describing the situation.

3. Define structural vulnerability.

4. Provide an example of a structurally vulnerable patient case/presentation. Be specific in describing the situation.

5. According to the American College of Cardiology, rates of hypertension control are significantly lower in Hispanic adults (47.4%), non-Hispanic Asians (43.5%), and non-Hispanic Blacks (48.5%) compared to non-Hispanic whites (55.7%). What are possible cultural and structural causes for this disparity? Please explain your answer.

6. Imagine you are on your ambulatory care APPE in a Diabetes clinic. One of the clinic providers is providing a brief topic discussion on diabetes management and states "Hispanic patients are more likely to have uncontrolled diabetes because their diet typically consists of foods high in fat and calories such as tortillas and pork. They also hold lots of family celebrations which may involve social pressure to overeat." Do you agree with this statement? Why or why not?

7. MM, a 60-year-old unemployed Black woman presented to the emergency department at her local community hospital on Chicago's South Side with a breast lump. The emergency medicine physician suspected an infection and discharged her with a prescription for antibiotics and a recommendation to follow up with her primary care provider for her chronic medical issues.

   Six months later, when the lump persisted, MM obtained a mammogram through her primary care provider which revealed potential breast cancer. She was referred to a general surgeon on staff at the community hospital who removed the cancer and recommended a mastectomy (breast removal). MM was neither informed of her cancer's stage nor referred to an oncologist. She never underwent BRCA gene mutation testing.

   However, she was then contacted by a navigator who had been assigned to the hospital by the nonprofit Metropolitan Chicago Breast Cancer Task Force. The navigator referred MM to a breast surgical oncologist at an academic medical center. There, the specialist informed her that she had stage III infiltrating ductal carcinoma, which required a needle biopsy and that a mastectomy was unnecessary. This "came just in time to stop me from having my breast cut off," noted MM.

   MM's local community hospital lacked an American College of Surgeons (ACS) Commission on Cancer Center designation. At hospitals lacking ACS designations, mammograms are often read by general radiologists, not mammography specialists. Many of these hospitals are not equipped to perform needle biopsies of suspicious breast masses, which is the standard of care.

   Which THREE of the following factors are most important for explaining MM's presentation and outcome? Indicate the most important, second most important, and third most important factor.

Choose from list: Access to healthcare, cultural background/beliefs, economic policies, gender bias, genetic predisposition, health delivery system, health insurance, health literacy, individual behaviors/lifestyle choices, individual or family income, institutional racism, medical/psychiatric history, medication adherence, physician bias, social policies, socioeconomic position, substance use

8.  Please explain your rationale behind selecting your top THREE factors.

9.  What might improve care and outcomes for MM and patients like MM and why? Be as specific as possible.

10. According to the Substance Abuse and Mental Health Services Administration, rates of deaths attributed to overdose on synthetic opioids are significantly higher in non-Hispanic Blacks (9.0%) compared to other ethnicities and the general population. What are possible cultural and structural causes for this disparity? Please explain your answer.

11. Imagine you are on your ambulatory care APPE in a Cholesterol clinic. One of the clinic providers is providing a brief topic discussion on cholesterol management and states "Asian patients are more likely to have uncontrolled cholesterol because their diet includes carbohydrates such as rice and significant use of oil in their cooking. They also celebrate Asian holidays which involve rich and fatty foods." Do you agree with this statement? Why or why not?

12. MB, a 44-year-old man with chronic back pain, diabetes, hypertension, asthma presented to a Philadelphia free clinic with an acute exacerbation of back pain triggered by carrying heavy loads of trash at work. A premedical student acting as his health care advocate accompanied him.

    MB was hesitant to seek health care because he had no health insurance and mistrusted institutions as a result of his extensive negative experiences with the criminal justice system in both his native Puerto Rico and the mainland US. He has a history of incarceration. He seemed nervous in the clinic which had no Latino staff and was located in a middle-class neighborhood far from his home. The advocate reassured him in Spanish that the doctor was trustworthy and urged him to speak frankly about his health problems, including his challenges in obtaining medication. MB reported that during recent back pain exacerbations he occasionally resorted to purchasing one or two 5-mg oxycodone tablets off the street on the block where he lived. The physician gave MB ibuprofen and a prescription for five 5-mg oxycodone tablets, enrolled him in the clinic's diabetes and hypertension programs, and scheduled a follow-up visit.

    MB never filled the prescription and did not return to the clinic despite repeated attempts by the advocate both in person and over the phone. MB reported that his pain was tolerable and he was managing his diabetes, hypertension, and asthma with family members' medications.

    Which THREE of the following factors are most important for explaining MB's presentation and outcome? Indicate the most important, second most important, and third most important factor.

    Choose from list: Access to healthcare, cultural background/beliefs, economic policies, gender bias, genetic predisposition, health delivery system, health insurance, health literacy, individual behaviors/lifestyle choices, individual or family income, institutional racism, medical/psychiatric history, medication adherence, physician bias, social policies, socioeconomic position, substance use

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2     13. Please explain your rationale behind selecting your top THREE factors.
3
4     14.        What might improve care and outcomes for MB and patients like him and why? Be as
5          specific as possible.