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Using the CIPP Model of Evaluation on a Health Disparities Curriculum Delivered to Medical Residents in 12 Residency Programs

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USING THE CIPP MODEL OF EVALUATION ON A HEALTH DISPARITIES CURRICULUM DELIVERED TO MEDICAL RESIDENTS IN 12 RESIDENCY PROGRAMS

by

GAURI KAMLAKAR SHEVATEKAR

(Under the Direction of Joanne Chopak-Foss)

ABSTRACT

Background: Although the Accreditation Council for Graduate Medical Education (ACGME) has provided educational directives on health disparities education during residency program for the medical residents, there is paucity of curricula focused on disparities education within the graduate medical education.

Objective: The purpose of this study was to evaluate a Health Disparities Curriculum (HDC) that was delivered to twelve residency programs at a College of Medicine.

Methodology: The study employed a cross-sectional study design. Stufflebeam's Context-Input-Process-Product (CIPP) model was utilized as theoretical framework to assess whether the curriculum achieved its stated goals and objectives, the teaching and learning processes, and the outcomes of the health disparities curriculum through the feedback received from medical residents who participated in the electronic and paper-based surveys.

Results: The response rate for the study was 46.68%. Context evaluation showed that there was agreement among the residents on the curriculum meeting its stated goals and objectives. In input evaluation, the residents expressed the need for community engagement opportunities, interactive content, and actional strategies. Time constraints were identified as one of the barriers

to attending the sessions and for curricular incorporation. A unique attitudinal barrier was identified where residents perceived lack of control in addressing disparities. Findings of process evaluation indicated statistically significant difference in the proportion of residents attending the sessions by race, specialty, and year in the residency program. The medical residents reported favorable perceptions on the relevance of content and the instructor's competence. Residents from the non-primary care specialties reviewed the learning resources statistically significantly more as compared to the residents in the primary care specialties. Findings of product evaluation showed statistically significant increase in self-efficacy after curriculum participation, increased awareness, statistically significant increase in disparities discussions and community partnerships, and favorable perceptions on curricular utility. There was no difference in inclination to incorporate cultural humility among residents and no change in scholarly activity development.

INDEX WORDS: Graduate Medical Education, Health Disparities Curriculum, Context-Input-Process-Product, CIPP, Evaluation

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by

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DEDICATION

This dissertation is dedicated to the guiding light in my life, who nurtures me spiritually, to my Sadgurudev: It is only with your grace that I can achieve this. My humble salutations to you. To God Almighty, it is Your footprints that I see carrying me through one of the most challenging academic odysseys. Glory to You! It is true, faith in You, moves mountains.

This dissertation is dedicated to my parents, Dr. Kamlakar G. Shevatekar and Mrs. Usha K. Shevatekar. All my accomplishments are because of your blessings, unwavering support, and trust in me. I owe it all to your love. I also dedicate this dissertation to my daughter, Narayanee, my study companion since she was in utero! Reach for the stars, baby girl, and keep your feet firmly grounded. Your Aai will always be there for you.

Lastly, I dedicate this dissertation to all the women/moms who do it all: cook, clean, do laundry, look after the kids, family, house, pets, and the yard! Women who are equally committed to their personal and professional growth, to fulfilling their personal, educational, social, and professional dreams and aspirations. Women who keep desiring a break and a bit of help, but still keep going with full gusto, every single day. They learn, they educate, they grow, and they nurture. To these strong, relentless women: I see you. I know you. I greatly appreciate you and I am proud to be one of you. Here's to my tribe! Keep conquering! Keep burning bright!

"Let us, then, be up and doing,

With a heart for any fate.

Still achieving, still pursuing,

Learn to labor and to wait."

-Henry Wadsworth Longfellow (Poem: A Psalm of Life)

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CHAPTER I

INTRODUCTION

Background

Health disparities can be defined as differences that exist among specific population groups in the United States in the attainment of full health potential. These differences can be measured by variations in incidence, prevalence, mortality, burden of disease, and other adverse health conditions (National Institutes of Health, 2014). Health disparities exist across racial, ethnic subgroups as well as by age, gender, socioeconomic status, geographic location, disability status, and sexual orientation. Health care disparities can be defined as differences among population groups in the availability, accessibility, and quality of healthcare services aimed at prevention, treatment, and management of diseases including screening, diagnostic, treatment, management, and rehabilitation services (Rana, n.d.). Health equity is the state in which everyone has the opportunity to attain full health potential without being deprived of this potential by one's social position or socially defined circumstances. Health equity and opportunities are inextricably linked. Currently, in the United States, there is inequitable distribution of the burden of disease and poor health among the minority and the socially disadvantaged population groups (National Academies of Sciences, Engineering, and Medicine et al., 2017). This inequitable distribution is the result of social, economic, environmental, and structural factors. These factors govern the social determinants of health, that is, the conditions in which people are born, grow up, live, work and age, thus affecting individual as well as population health.

In 2003, the Institute of Medicine (IOM), now known as the National Academy of Medicine, published its groundbreaking report: Unequal treatment: Confronting racial and ethnic

disparities in healthcare. This study was done at the request of Congress, which had asked the IOM to assess the extent of racial and ethnic differences in the quality of healthcare received by the patients, which were not attributable to known factors such as access to care, ability to pay, or insurance coverage. The IOM was also asked to evaluate potential sources of these disparities including role of bias, discrimination and stereotyping at the provider, patient, institutional and health system levels; and to provide recommendations on interventions to eliminate these disparities. The key findings of this seminal report included the following: Racial and ethnic disparities in health care exist even when age, income, insurance status, and severity of conditions are comparable. These disparities occur in the broader context of historic and contemporary social and economic inequality and racial and ethnic discrimination. There are many sources of these disparities: Bias, stereotyping, prejudice, clinical uncertainty on the part of health care providers, health care plan managers, patients; thus, the health care system as-a-whole contributes to the disparities (Nelson, 2002).

In addition, the committee offered several strategies to eliminate these disparities: Use of evidence based guidelines to promote consistency and equity of care, structuring payment systems to ensure adequate supply of services to minorities, and limiting provider incentives that promote disparities, financial incentives for practices that reduce barriers, and encourage evidence based decision making to improve provider-patient trust and communication, promotion of language interpreter services and use of community health workers and care teams for the provision of care. The committee also recommended increasing diversity of the health care workforce, for providers to increase their knowledge on causes of disparities and emphasized the need for integration of cross-cultural training aimed at current and future health professionals along with collection of data on patients' race and ethnicity (Nelson, 2002).

Furthermore, according to the Agency for Healthcare Research and Quality (Agency for Healthcare Research and Quality, 2013), although the quality of care for all populations has been improving, access to health care is diminishing and health disparities continue to persist. By 2044, the minority populations will become the majority population with more than half of the total U.S. population. By 2060, one in 5 of the nation's total populations will be foreign born. Given this demographic transformation, it is important to address the health and health care disparities faced by the minority populations, because in the next 30 years, their health status will define the nation's health. The provisions of the Affordable Care Act are designed to address racial and ethnic disparities in health care that include a requirement to collect data on patient race, ethnicity, and language preferences by federally funded health care; expansion of research on health and health care disparities; promoting cultural competency among health care providers, promoting racially and ethnically diverse workforce; and expanding insurance coverage to improve access to care. As payment and hospital accreditation become more dependent on patient outcomes, it will be imperative to address health care disparities.

As the patient population becomes racially, culturally, and socioeconomically more diverse, it is critically important to train next generation physicians on health and health care disparities. The Accreditation Council on Graduate Medical Education (ACGME) puts a strong emphasis on the role of graduate medical education in eliminating health disparities and achieving health equity and has delivered education imperative for residency and fellowship programs to address health care disparities (Maldonado et al., 2014). The ACGME's Next Accreditation System (NAS), designed to prepare physicians to practice in the 21st century, was implemented in July 2013 for Internal Medicine (IM) and in July 2014 for all other specialties. Recognizing the public's need for a physician workforce capable of tackling the challenges of a

rapidly evolving health care environment, ACGME implemented the Clinical Learning Environment Review (CLER) program as a part of its Next Accreditation System in 2012. The CLER Program is designed to provide periodic feedback to US teaching hospitals, medical centers, health systems, and other clinical settings affiliated with ACGME-accredited institutions. The feedback through CLER program addresses the following six Focus Areas: Patient Safety; Health Care Quality; Care Transitions; Supervision; Well-Being; and Professionalism. The feedback is also designed to improve clinical sites' engagement in training the resident and fellow physicians to provide safe, high quality patient care. The CLER program is based on the model of continuous quality improvement to evaluate, encourage, and promote improvements in the Clinical Learning Environment. The CLER program provides 3 types of formative feedback to the sites: Oral and written reports summarizing the observations of CLER field representatives, and national aggregated and de-identified data showing progress on a continuum to achieving optimal resident and fellows' engagement in 6 focus areas (CLER Evaluation Committee, 2019) .

The document titled 'CLER Pathways to excellence' developed by the CLER Evaluation Committee serves as a tool to promote discussions and actions to optimize the clinical learning environments (CLEs). This document serves as expectations that the CLEs try to meet or exceed to provide the best care to their patients and to produce the highest quality physician workforce. The CLER Pathways to Excellence document provides a series of pathways for each of the six CLER focus areas. In turn, each pathway has a series of key properties that can be used to assess resident, fellow, and faculty member engagement within the learning environment. The CLER Pathways to Excellence is also aimed to accelerate national conversations about the importance of continually assessing and improving the clinical learning environments for the U.S. Physician

workforce and the role of GME in promoting safe, high-quality patient care-among health care leadership, educators, policy makers, and patients (CLER Evaluation Committee, 2019).

In the 'CLER Pathways to excellence' document, the pathways for the focus area Health Care Quality (HQ) encompass health and health care disparities. The Health Care Quality Pathway 5 (HQ Pathway 5) provides expectations for the Clinical Learning Environment (CLE) on the resident, fellow and faculty member education on eliminating health care disparities. The Health Care Quality, Pathway 6 (HQ Pathway 6) provides expectations for the CLE on resident, fellow, and faculty member engagement in clinical site initiatives to eliminate health care disparities, and the Health Care Quality Pathway 7 (HQ Pathway 7) mandates that residents, fellows, and faculty members deliver care that demonstrates cultural humility. This pathway provides expectations for the CLE about providing continual training in cultural humility relevant to the patient population served by the clinical site and it is also expected to ensure that the clinical care team, including residents, fellows, and faculty members, deliver care that incorporates the views of culturally diverse patient population (CLER Evaluation Committee, 2019).

Although the ACGME has provided clear mandates, it is unclear to what extent residencies and fellowships have implemented their own curricula addressing health and health care disparities. The report describing national findings from last round of CLER visits stated that although house officers were able to identify their populations that were most at risk for health disparities, few programs had a formally designed structure to address disparities. The house officers, faculty members, and program directors were not involved in efforts to address disparities in any substantive way. There was lack of standardized curricula to address disparities

and residents reported poor perceived self-efficacy to discuss disease-specific disparities with patients. There was lack of formal cultural competency training addressing the populations served by the programs as well (Co et al., 2018). Other barriers to the implementation of a health disparities curriculum include lack of faculty expertise especially in the area of assessing resident's cultural competency skills, lack of institutional resources and time (Cardinal et al., 2016). Blanco et al. (2020) stated that the preferred methods to learn about health disparities that are directly relevant to clinical practice consisted of didactics, experiential learning, and skill development. The investigators also suggested that a patient-centered approach highlighting best practices such as use of interpreter services should be promoted along with a combined approach of dedicated time for health disparities instruction and integrating instruction into existing small group discussions and active learning opportunities (Blanco et al., 2020)

Statement of the Problem

Peoria is the seat of the University of Illinois College of Medicine (UICOMP) which is one of the four medical campuses of the University of Illinois at Chicago (UIC). UICOMP, as a premiere medical institution, serves as a four-year medical school and a host for fifteen ACGME accredited residency programs including Family Medicine, Internal Medicine, Pediatrics, Medicine-Pediatrics combined, Internal Medicine-Transitional, Emergency Medicine, General Surgery, Neurology, Neurosurgery, Psychiatry, Diagnostic Radiology. UICOMP also hosts 8 ACGME accredited fellowship programs. Thus, UICOMP trains over 500 medical students, residents, and fellows annually with 200+ medical student enrollment and 300+ enrollment for the residents and fellows. There are 226 full-time and 1,423 part-time/non-salaried faculty and an annual budget of $87.3 million dollars. About 1 in 6 physicians in Illinois either received their MD degree or residency training from UICOMP. The campus also boasts 950 plus hospital beds

within 6 blocks due to the presence of major hospital systems such as OSF Healthcare and Unity Point Methodist. Peoria is also a hub for healthcare with 708 healthcare establishments that employ 29,731 people in the Greater Peoria region (University of Illinois College of Medicine at Peoria, 2020). The UICOMP residency programs and the hospital systems serve about 2 million patients populations from urban and rural areas in Central Illinois (University of Illinois College of Medicine at Peoria, 2020). That is why, Peoria works as an ideal location to conduct this study: On one hand, it is a major healthcare hub with multitude of physicians and teaching programs and on the other hand, until academic year 2019-2020, UICOMP did not have a formal health disparities curriculum for the medical residents.

UICOMP-GME Health Disparities Curriculum

With notable exceptions of few primary care specialties, there is lack of evidence that health disparities curricula exist for other specialties. There is also a need to link competencies and to measure outcomes and effectiveness of existing curricula (Co et al., 2018; Dupras et al., 2020). Therefore, it is important to discuss the UICOMP-GME's Health Disparities Curriculum, which to the researcher's knowledge, is the only curriculum that is implemented institutional GME wide: to twelve residency programs available at UICOMP.

The need for development and implementation of the Health Disparities Curriculum was indicated after the 2018 CLER site visit to UICOMP. The report findings underscored the need for teaching health disparities to the residents, fellows, and faculty members as well as need for meaningful involvement in the community to eliminate health disparities. These findings, under the leadership of then Associate Dean of the UICOMP GME, Dr. Thomas Santoro led to the search for faculty to develop and teach health disparities curriculum as well as lead efforts to get residents involved in community. This search led to the appointment of the current curriculum

director, Dr. Gauri Shevatekar (a physician from India with a master's degree in public health, a doctoral degree candidate, and the principal investigator for the curriculum evaluation).

The timeline for the development and implementation of the Health Disparities Curriculum was ambitious. The curriculum director was hired in May 2019 and the curriculum delivery began in August 2019. The curriculum goals and objectives, its structure, themes for each year, content for each lecture, viewing/reading material and in-class activities were developed by the principal investigator. The Health Disparities curriculum was delivered to all residency programs at UICOMP that include the following: Internal Medicine, Internal Medicine-Transitional, Internal Medicine-Pediatrics, Family Medicine, Psychiatry, Emergency Medicine, Pediatrics, Diagnostic radiology, General Surgery, Neurosurgery, Neurology, OBGYN. The health disparities curriculum was a structured, 3-year longitudinal curriculum that was delivered through a core didactic component and a flexible, experiential component. The curriculum also offered elective workshops and access to health disparities resource folder. For the didactic component that was delivered to all programs, 1-hour long lectures were conducted, with a total of 4 lectures per residency program, thus a total of 52 lectures were delivered per academic year. The lectures were devised according to the theme for that year. Lecture content was developed from books, reports, articles, online modules, and other publicly available resources. The lecture content was developed and scheduled such that the content for each year could stand alone but would add over three-year period. The lectures involved interactive activities such as quizzes, small-group discussions, data exploration, surveys, self-reflection, and implicit association tests etc. At the end of the lecture, relevant materials/resources such as journal articles, commentaries, CME offering, free courses on relevant topics were shared with the residents and faculty members.

The instructor attempted to make these lectures specific for each specialty program by including specialty specific data, and by providing specialty- specific literature on health disparities/health equity/population health agenda as published by the central body for each specialty (for example, American College of Physicians for Internal Medicine, American Academy of Family Physicians for Family Medicine and American College of Radiology for Interventional Radiology program etc.), by researching specialty-specific publications on relevant topics, and other available resources. In the first year of the curriculum, the focus was on health disparities, health care disparities, influencing factors, specialty specific issues/positions, and community health needs. The second year of the curriculum was focused on factors affecting health care disparities including cultural competency, systemic injustices and racism, patient, provider factors including attitude and bias. The third year of the curriculum focused on the role of physicians in reducing disparities through advocacy and leadership, and strategies to eliminate health/health care disparities per each specialty.

For the experiential component, two video screenings sessions were conducted each year from 2019-20 to 2021-22, and a population health workshop was added from the academic year 2020-21. The residency programs could opt-out from the experiential component depending on their curricular time availability. The instructor worked with the program directors and faculty members to tailor the health disparities curriculum towards the program needs. In this effort, the instructor scheduled meetings with the program directors to seek their inputs regarding this curriculum as well as to generate a broad discussion on their specialty's outlook towards population health and health and health care disparities.

As part of the curriculum, the curriculum director also developed a health disparities resource folder that served as a centralized resource for books, commentaries, reports, articles

etc. on health disparities, health care disparities, health equity and social justice and social determinants of health. Specialty-specific folders were created that contained specialty-specific articles on these topics. All residents and faculty members were given access to this folder. The instructor shared relevant resources with the residents on the topics discussed during the didactic and experiential sessions.

The purpose of the curriculum was to provide broad understanding of both the health disparities, health care disparities and the factors that influence them; issues related to health equity and social justice and the physicians' role in reducing disparities. The overarching goals of the curriculum are as follows:

- Prepare residents to provide compassionate, effective, and appropriate patient care by providing education on the patients' health issues within the context of social determinants of health and at the individual, familial, organizational, community and policy levels.
- Equip residents with resources to learn their role as leaders to achieve health equity and social change through advocacy with the focus on the communities that they serve.

The lecture themes, contents, in-class activities, and shared materials for the Health Disparities Curriculum are presented in the table below:

Table 1. 1

The UICOMP-GME Health Disparities Curriculum Lecture Content, Activities, and Resources Shared

Year 1: Academic Year 2019-2020
Theme: Factors affecting health disparities, Health care disparities, community health issues in Peoria, IL, and opportunities for community involvement

Lecture Topic	In-Class Activity	Shared material
Year 1 Lecture 1: Introduction to health and health care disparities: Socioeconomic status	Poll everywhere Quiz, Questions from Health Equity Quiz: Unnatural Causes	
Year 1 Lecture 2: Place Matters	Video screened: "Place matters" followed by small-group discussion, handouts with questions provided	Handouts with community exploration questions.
Year 1 Lecture 3: Race and Ethnicity	General lecture followed by content specific to each specialty	Policy positions of the central body for the specialty (for e.g., AAFP, ACP etc.) printed and shared with the residents in each program.
Year 1 Lecture 4: Community Health Needs in Peoria, IL	Social Ecological Model Matrix exercise: Public health issue and disparity identification, implications, recommendations	**Following were emailed:** i) Community Health Needs (County Health Rankings data for Tri-county area), ii) Available Community health based GME electives, iii) Hospital system Initiatives for addressing disparities, Opportunities for involvement, iv) Opportunities for community involvement, v) Link for Tri-county Health Needs Assessment and vi) Link for Community Health Improvement Plan

Year 1: Experiential learning:

Screened videos:
1) Docuseries: Unnatural causes. Episode 1: In sickness and in wealth, 2) Place Matters

Year 2: (Academic Year 2020-2021)
Theme: Factors affecting Health Care disparities with the focus on cultural competency, patient and provider attributes, and systemic attributes

Lecture Topic	In-Class activity	Shared material
Year 2 Lecture 1: Cultural Competency	a) Cultural Competency Self-assessment, b) Small group discussion questions: Physicians asked to discuss their own culture, values, beliefs etc. Cultural competency begins with	**Following were emailed:** **A)** Physician's Practical Guide to Culturally Competent Care: DHHS resource: Think Cultural Health **B)** Cultural Competency Self-assessment: Qualtrics link for a self-assessment

	understanding of self. This discussion also provided opportunity learn from/about peers.	
Year 2 Lecture 2: Patient attributes	**a)** Group-think questions generating word cloud on quality of care, patient satisfaction, medical mistrust, doctor-patient interactions, **b)** Tuskegee awareness quiz	**Following articles were emailed**: 1) LaVeist, Nickerson, Bowie (2009). Attitudes about racism, medical mistrust, and satisfaction with care among African American and White cardiac patients 2) Brandon, Isaac, LaVeist (2005). The legacy of Tuskegee and trust in medical care: Is Tuskegee responsible for race differences in mistrust of medical care? 3) Johnson, Roter, Rowe, Cooper. (2004). Patient race/ethnicity and quality of patient-physician communication during medical visits. **Links for following videos were emailed**: 1) Relationship between Race and Healthcare (Discussion with Dr. Clenton Coleman 2) TEDx Talk: Racism and healthcare
Year 2 Lecture 3: Provider attributes	**a)** AAFP based survey on Implicit bias in health care practice, **b)** Project Implicit: Race IAT	**Following articles were emailed**: 1) Green, Carney, Pallin, Ngo, Raymond, Iezzoni, & Banaji. (2007). Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. 2) van Ryn & Burke (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients **3) Project Implicit link 4)** Stanford Center for Continuing Medical Education Course: **'Unconscious Bias in Medicine: Free course for physicians**, CME offered
Year 2 Lecture 4: Systemic attributes: Racism	a) Concept mapping exercise: Racism and Health b) Dr. Camara Phyllis Jones Video: Allegories on Race and Racism	
Year 2: Screened videos: 1) Docuseries: Race the power of an Illusion, Episode 3: The house we live in. 2) AAP Video: Cultural Humility Screened on Zoom class sessions and Kanopy link sent to all residents and faculty (free access to the docuseries with UIC credentials or any U.S. Public library credentials)		
Year 2: Population Health Workshop (September 2020): Case Study: Flint water crisis Source: Association for Prevention Teaching and Research (APTR) **After workshop**: emailed 1) Evaluation 2) Articles: a) Rethinking Tiebout-Contribution of political fragmentation and racial/economic segregation in Flint water crisis b) How do neighborhood conditions shape health c) Michigan Civil Rights Commission Report: Systemic racism through the lens of Flint3) News article links about high lead levels in Peoria		
Year 3 (Academic Year 2021-22)		

<table>
<tr><td colspan="3">Theme: Role of physicians in addressing disparities (Advocacy and leadership, QI/Research/ community engagement), understanding privilege, identifying microaggressions, discrimination and strategies to address these, and association between health equity, social justice, and medicine.</td></tr>
<tr><th>Lecture Topic</th><th>In-Class activity</th><th>Shared material</th></tr>
<tr><td>Year 3 Lecture 1: Addressing health and health care disparities</td><td>a) Group discussion on residents' needs to address disparities effectively, including resources, opportunities, and skills
b) Discussed important secondary data resources</td><td></td></tr>
<tr><td>Year 3 Lecture 2: Advocacy</td><td>a) Brief discussion: residents' thoughts on advocacy
b) Case-based discussion on advocacy (ways to advocate for vulnerable/minority patient populations)</td><td>Following was emailed: Overview of U.S. Congress structure, timing, committees, and legislative process</td></tr>
<tr><td>Year 3: Lecture 3: Viewpoints, microaggression, privilege</td><td>a) Discussion on 'Why do disparities continue to exist' based on 8 viewpoints
b) Vignette-based discussion on identifying microaggressions and contexts</td><td>Following was emailed: a) Stop-Talk-and Roll strategies developed by the Georgetown University for medical students and residents</td></tr>
<tr><td>Year 3 Lecture 4: Health equity, social justice, and medicine</td><td>a) Residents' perspectives on social justice,
b) Case-based discussion</td><td></td></tr>
<tr><td colspan="3">Year 3: Screened videos:
1) Clinica de migrantes and 2) Talk with the experts (discussion snippets Dr. David Williams, Donald Berwick, and Dr. Lisa Cooper).Screened on Zoom class sessions and Kanopy link sent to all residents and faculty (free access to the docuseries with UIC credentials or any U.S. Public library credentials)
2)</td></tr>
<tr><td colspan="3">Year 3: Population Health Workshop (December 2021): Viewpoints, Microaggressions and privilege.</td></tr>
</table>

The logical step after any program development and implementation was to perform evaluation of the program. Curriculum evaluation was the focus of this investigation and the theoretical framework for this study is discussed below.

Purpose of the Study

The purpose of this study was to evaluate the Health Disparities Curriculum (HDC) in meeting its stated goals and objectives, the teaching and learning processes, and the outcomes of the health disparities curriculum through the perspectives of the medical residents, using the Stufflebeam's CIPP model as the theoretical framework. Stufflebeam proposed this model in 1971 and an update to the model was provided in the year 2003. This model provides a comprehensive framework for guiding formative and summative evaluations that can be utilized for programs, projects, products, personnel, institutions, and systems. The model can be configured for self-evaluations, for internal evaluations, or for external evaluations. The model has been employed extensively throughout the U.S. and internationally in large and small, short-term, and long-term investigations. Various disciplines and service areas, including education, housing and community development, transportation safety, and military personnel review systems have applied the CIPP model (Stufflebeam, 2003).

CIPP model consists of four complementary sets of evaluations where CIPP stands for an entity's context, inputs, processes, and products. Context in this model refers to the considerations that focus on needs, available assets/resources problems and opportunities. These consideration aid decision makers define/judge goals, priorities, and outcomes of the program. Input stands for the necessary resources that are required to meet the needs/goals outlined in the context phase. The inputs can be alternative approaches, competing action plans, staffing plans, and budgets for their feasibility and potential cost-effectiveness to meet targeted needs and achieve goals. Other inputs can be stakeholder, research, or subject matter experts. Process focuses on the implementation of plans and later, enables the decision makers to analyze program performance and outcomes. Product refers to identification and assessment of outcomes

which can be intended or unintended. The outcomes can be short term and long term. These enable the decision makers and users in assessing the program's success in meeting targeted needs (Frye & Hemmer, 2012; Stufflebeam, 2003).

This study utilized feedback from the medical residents through surveys. The results of this study will inform the decision makers about the effectiveness of implementing such a curriculum, outcomes, and further improvements for this curriculum. The findings of this study may also help other residency programs to develop and implement a health disparities curriculum for their learners. The following questions guided this evaluation investigation.

Research Questions

Overarching research question for context evaluation: What were the perceptions of the medical residents on the Health Disparities Curriculum (HDC) in achieving its stated goals and objectives?

- R.Q.1a) Was there a difference among the medical residents based on age, gender, race, medical specialty, and residency year in their perceptions about whether the health curriculum achieved its stated goals and objectives ?

Overarching research question for Input evaluation: What inputs were provided by the medical residents to improve the Health Disparities Curriculum?

- R.Q. 2a) What alternative approaches were suggested by the medical residents?

Overarching research question for process evaluation: What were the differences among the medical residents on their perception of the teaching and learning processes of the health disparities curriculum?

- R.Q. 3a) Was there a difference (measured by selected demographic factors age, gender, year in residency program, and specialty) in the number of sessions attended?
- R.Q. 3b) Was there a difference among the medical residents in their perceptions of the teaching and learning processes of the health disparities curriculum?
    - 3b1) Was there a difference among the medical residents in their perceptions about the relevance of the curriculum content?
    - 3b2) Was there a difference among the medical residents in perceptions of the instructor's competence?
- R.Q. 3C) Was there a difference among the medical residents in the review of materials ?

Overarching research question for product evaluation: What were the participant outcomes after taking the health disparities curriculum?

- R.Q. 4a) Was there any difference among the medical residents in perceived self-efficacy in identifying and addressing health disparities and health care disparities before and after implementation of the curriculum?
- R.Q. 4b) Was there any difference among medical residents in awareness of the factors influencing disparities?
- R.Q. 4c) Was there any difference among the medical residents in attitude towards cultural humility?
- R.Q. 4d) Was there any difference among the medical residents in engagement on disparities?
- R.Q. 4e) Was there any difference in perceptions among medical residents about the utility of the health disparities curriculum?

Delimitations

The study was delimited to medical residents within several medical residency training programs at UICOMP during the 2021-2022 academic year. Survey administration was delimited to two methods: 1) Electronic method using a Qualtrics™ link to the survey sent via email or displayed during the scheduled Health Disparities Curriculum sessions, or 2) Paper-based surveys completed at the end of one of the scheduled education sessions.

Assumptions

It was assumed by the researcher that all residents who voluntarily participated in the survey could understand all the questions in the questionnaire and answered truthfully about their perceptions on the Health Disparities. It was also assumed that the context, input, process, and outcome evaluation would provide an accurate measurement of the curriculum's success.

Definition of Terms

Accreditation Council for Graduate Medical Education (ACGME). The ACGME accredits Sponsoring Institutions and residency and fellowship programs, confers recognition on additional program formats or components, and dedicates resources to initiatives addressing areas of importance in graduate medical education. In the United States, the ACGME sets and monitors the professional educational standards which are essential in preparing physicians to deliver safe, high-quality medical care to all populations. It is an independent, not-for-profit, physician-led organization.

Context-Input-Process-Product (CIPP) evaluation. A theory-based evaluation model proposed by Stufflebeam consists of four complementary sets of evaluations. CIPP stands for an entity's context, inputs, processes, and products.

Clinical Learning Environment Review (CLER). CLER program is designed to provide periodic feedback to US teaching hospitals, medical centers, health systems, and other clinical settings affiliated with ACGME-accredited institutions.

Graduate Medical Education (GME). Graduate Medical Education refers to the period of training in a particular specialty (residency) or subspecialty (fellowship)following the medical school.

Next Accreditation System (NAS). This accreditation system was first implemented by ACGME in the year 2013. It is utilized for accreditation of all residency programs. Annual data gathering on the achievement of milestones by the residents is one of its main components**.**

Non-primary care specialties: These specialties provide condition-specific or system-specific management including surgical care. These specialties include Emergency Medicine, General Surgery, Neurology, Neurosurgery, Radiology, Psychiatry, and Obstetrics and Gynecology (Ob/Gyn). The physicians in these specialties are called specialists. These physicians may work with the primary care providers (PCPs) to provide care in their respective specialties.

Primary care specialties: These medical specialties fulfil the general medical needs of the populations and include Family Medicine, Internal Medicine, Pediatrics, and combined Internal Medicine-Pediatrics (MedPeds). The physicians in these specialties are called as primary care physicians (PCPs) who have broad knowledge of diseases and ailments. The primary care physicians manage the overall health including preventive care for their patients and can refer their patients to the specialists for advanced care.

Program Director(s): A director of a residency program**.**

Residency Programs/Residency: A program in a specific medical specialty that offers post-graduate medical training. Depending on the specialty, residency training can range from 3 to 7 years. A residency is preceded by medical school and followed by fellowship. Medical specialties are unrelated to the physician's undergraduate medical degree and are determined by a physician's postgraduate residency training. Both, Medical Doctors (MDs) and Doctor of Osteopathic Medicine (DOs) have to complete several years of residency training, with optional fellowship training, to practice in any given primary care or non-primary care specialty.

Medical residents/Resident physicians: A graduate medical education trainee physician pursuing a 3 to 7 years residency training in an accredited residency program within a medical specialty.

Residency year/Year of residency: The year in which a resident is being trained within a specialty-specific residency program. The residency programs generally range from three to seven years in length.

Significance of the study

This is a first-of-a-kind study that performed a theory-based evaluation of a Health Disparities Curriculum taught institution wide to twelve residency programs within a college of medicine. This formative evaluation, through the feedback received from the graduate learners/residents provides insights into the achievement of goals and objectives, teaching and learning processes and outcomes using the Context-Input-Process-and-Product evaluation framework. Findings from the study will be utilized to improve the curriculum. The findings of this study may serve as a blueprint to other residency programs, GMEs and sponsoring medical

institutions which are in the process of development of similar health disparities curricula for their learners.

Summary

This chapter provides a brief background for the study along with a brief description of the purpose and theoretical framework, research questions, definition of terms, assumptions, delimitations, and significance of the of the study. Chapter 2, will provide review of the related literature on health and health care disparities, influencing factors that lead to health inequities, the role of graduate medical education, ACGME educational directives, and the need for health disparities education for the medical residents, a review of literature on existing relevant curricula in GME, and the theoretical framework.

CHAPTER II

LITERATURE REVIEW

Health Disparities Within the United States

The National Institutes of Health define health disparities as the differences in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States (National Institutes of Health, 2002). The definitions of health disparities may vary but all these definitions address the differences among populations, especially comparing one population group to a more advantaged group. Most of these definitions also address the issues of social justice and equity (American Psychological Association, n.d.). Some of the characteristic definitions are listed below.

- Differences in the incidence, prevalence, mortality and burden of diseases and other adverse health conditions that exist among specific populations in the United States (National Heart, n.d.)
- Differences in health outcomes that are closely linked with social, economic, and environmental disadvantage (Office of Minority Health, 2011),
- Health inequalities that are considered unnecessary, avoidable, and unfair/unjust (World Health Organization, n.d.)

A wide range of populations that encounter systematic, social, or economic discrimination/ exclusion and suffer adverse health as a result are considered as the health disparity populations (American Psychological Association, n.d.).While the term 'health disparities' is often used or interpreted in the context of racial or ethnic group differences, disparities also exist across many other dimensions such as age, gender, socioeconomic status, geographic location, sexual orientation, and disability status (Office of Minority Health, 2011).

Along with race and ethnicity, all of these aforementioned factors shape an individual's ability to achieve optimal health. This is certainly evident from the differential health outcomes across and within all the aforementioned population groups. Health disparities originate from health inequities, that is, systematic differences among the health of groups and communities due to unequal, unjust, and avoidable positions in the society (Office of Disease Prevention and Health Promotion, n.d.b).

Health disparities by Race and Ethnicity

When the researchers assessed the questions 'why some people are healthy and others are not', it resulted in the following conclusions: 1) In trying to improve health in developed societies, the focus, in recent years, has been on improving the quality and availability of health care, and 2) Most variability in the health status within the United States and other developed countries has very little to do with health care and everything to do with one's position in social hierarchy (Barr, 2014).

Within the United States, the emphasis is on improving health through the advancements in healthcare technology. It is very much evident through the proportion of the U.S. economy spent on providing health care. The proportion of U.S Gross Domestic Product (GDP) spent on healthcare has consistently increased from about 10 percent in 1987 to about 17.7 % in 2018 or $11, 172 per capita, the most in the world (Centers for Medicare and Medicaid, 2019). Even with the heavy investment in new medications, facilities, and new technologies to improve health care to improve health status, there are striking differences when the U.S. is compared to other developed countries that have implemented different policy decisions in terms of investing national resources in health care. When we compare economically developed countries based on significant population health indicators, namely, life expectancy, infant mortality and maternal

mortality, the populations within the U.S. have worse health status than the populations within any other countries (Barr, 2014). Life expectancy estimates how many years, on average, a baby born today can be expected to live. It is broken down by gender, given the consistent differences between males and females. Infant mortality estimates, from the population of babies born alive, how many babies will die before their first birthday. A maternal death is a death of a woman while pregnant or within one year of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related or aggravated by the pregnancy or its management but not from accidental or incidental causes. The maternal mortality ratio (MMR) is the number of maternal deaths over a year per 100, 000 live births. MMR is often used as an indicator of the nation's health along with life expectancy and infant mortality. The following table shows how U.S. compares with other economically developed nations:

Table 2. 1

Comparison of United States with Other Economically Similar Countries

Country	GDP spent on healthcare, percentage	Male life expectancy at birth in years	Female life expectancy at birth in years	Overall Life expectancy at birth in years	Infant Mortality (deaths per 1000 live births)	Maternal Mortality Rate 1990	Maternal Mortality Rate 2015	Percent change in maternal mortality rate from 1990 to 2015
United Kingdom	9.6	79.5	83.1	81.3	3.8	10	9	10
Netherlands	10.1	80.2	83.4	81.8	3.5	12	7	41.7
Denmark	10.1	79.2	83.1	81.2	3.8	11	6	38.8
Belgium	10.3	79.2	83.9	81.6	3.2	9	7	22.2
Austria	10.4	79.4	84.0	81.7	3.1	8	4	50.0
Norway	10.4	81.0	84.3	82.7	2.3	7	5	28.6
Canada	10.7	79.9	84.0	82.0	4.7	7	7	0.0

Japan	10.9	81.1	87.3	84.2	2.0	14	5	64.3
Sweden	11.0	80.8	84.1	82.5	2.5	8	4	50.0
Germany	11.2	78.7	83.4	81.1	3.4	11	6	45.5
France	11.3	79.6	85.5	82.6	3.7	15	8	46.7
Switzerland	12.3	81.6	85.6	83.6	3.6	8	5	37.5
U.S.A.	17.9	76.1	81.1	78.6	5.9	12	14	-16.7

There is no clear definition of the term ‘race’ and the concept of race suffers from various problems such as inconsistency in conceptualization, confounding of race, ethnicity and nationality, and changing measurement from census to census based on changed thinking, science and politics around race (Barr, 2014; LaVeist, 2005) Still, race and ethnicity are widely used in nearly every aspect of the society and also are most frequently used concepts in research conducted in the fields of public health, nursing and medicine (LaVeist, 2005). Race refers to one’s physical characteristics. Ethnicity refers to one’s religion, languages, customs, traditions, geographical origins, and heritage. It serves as a cultural identity. People who share common cultural and ethnic identity share a sense of one-ness, or a sense of shared fate (Pérez & Luquis, 2014). Race and ethnicity are powerful social constructs that have substantial effects on the lives of the individuals. It is important to acknowledge the social construction of race and ethnicity because it provides context to historical and social treatment, social perceptions, social/public policies, and practices around population groups. The racial and ethnic groups labelled as inferior have been vulnerable to unjust, differential treatment (National Academies of Sciences, Engineering, Division, Practice, Board on Population Health and Public Health, States, Committee on Community-Based Solutions to Promote Health Equity in the United, Baciu, Negussie, Geller, & Weinstein, 2017; Pérez & Luquis, 2014). Despite the innumerable efforts and many strides in improving the health of the people, racial and ethnic disparities have perpetuated. Given these are the significant constructs used to assess the health inequities, it is important that the solutions to achieve health equity address the historical, social, economic, and

political context of race and ethnicity within the United States (National Academies of Sciences, Engineering et al., 2017).

To address the racial and ethnic disparities, we also need to consider the distinctions of the majority and minority populations within the United States. Non-Hispanic White population is the 'majority population', constituting 61% of the U.S. population while other racial and ethnic populations, namely, Hispanics (18.1% of total U.S. population), African Americans/Blacks (12.7%), Asian (5.6%), American Indian/Alaska Native (1.5%) and Native Hawaiian/Pacific Islander (0.4% of total U.S. population) are considered as the 'minority populations' (Office of Minority Health, 2019). According to the U.S. census bureau, in 2014, about 37.9% of the U.S. population was identified as a racial or ethnic minority.

Life Expectancy by Race and Ethnicity in The United States

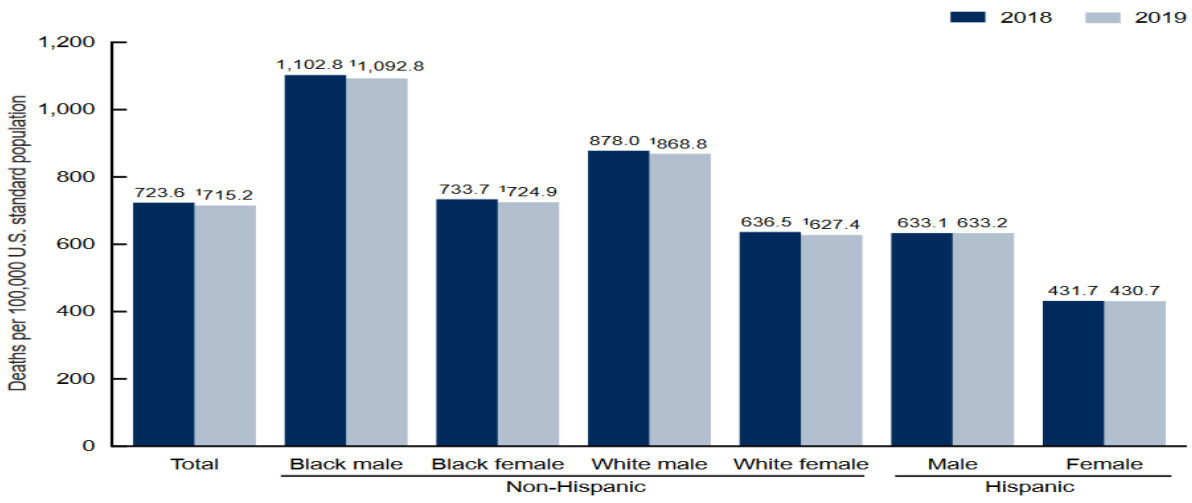
Although the United States spends 17.9% of the GDP on health care, approximately $10,207 per person, the largest proportion of GDP which is more than 2.5 times per person as compared to other economically comparable countries, the U.S. ranks 26th among those 35 countries. Japan leads the world in life expectancy at birth at 84 years (The Organization for Economic Cooperation and Development, (OECD), 2021) In the year 2018, life expectancy at birth in the United States was 78.7 years. The life expectancy at birth increased by 0.1 year for males (76.1 to 76.2) and females (81.1 to 81.2) from 2017 to 2018. For the Hispanic population, in 2018, the life expectancy at birth was 81.8 years. For the non-Hispanic single-race white population, it was 78.6 years and for the non-Hispanic single-race black population, it was 74.7 years (Arias, E., Xu, J., 2020).

Mortality by Race and Ethnicity

For racial and ethnic minorities within the United States, health disparities take various forms. In general, the racial and ethnic minorities have worse health status than non-Hispanic Whites. In terms of distribution and determinants of mortality (crude death rate, age-adjusted death rate, infant mortality rate, maternal mortality rate and low birth weight, years of potential life lost and life expectancy), the racial and ethnic minority populations typically have much higher rates of mortality as compared to the majority population. In the year 2019, the life expectancy at birth for the total U.S. population was 78.8 years. For males, the life expectancy was 76.3 years while for females the life expectancy was 81.4 years. The age-adjusted death rate for the total population decreased by 1.2% from 723.6 per 100,000 population in 2018 to 715. 2 in 2019. Although the age-adjusted death rates decreased for non-Hispanic black males and females with respective decreases of 0.9% and 1.2%, those rates were higher than non-Hispanic Whites.

Figure 1

Age-adjusted death rates by Race, Ethnicity, and Sex: United States, 2018 and 2019



Source: National Center for Health Statistics, National Vital Statistics System, Mortality.

Leading Causes of Deaths by Race and Ethnicity

Although chronic diseases are the leading cause of death in the U.S., with Cardiovascular disease, Cancer and Stroke being the top 3 causes, there are major differences in the leading causes of deaths for different racial and ethnic groups (LaVeist, 2005). According to a report by the National Center for Health Statistics on the leading causes of deaths for the year 2017, variations in the leading causes of deaths across five race groups and by ethnicity are presented in the table below. The five race groups had 7 leading causes in common, but had different relative burdens of disease. Some of the leading causes were shared by some groups and not by others. For non-Hispanic Blacks, homicide, and septicemia were the 7th and 10th leading cause but they were not shared by any other race or ethnic population groups. Similarly, for Asian/Pacific Islanders, Essential HT/Hypertensive renal disease was 10th leading cause, but it was not a leading cause for any other population group. There are also variations within the leading causes of deaths by age and gender.

Table 2. 2

Mortality in United States by Race and Ethnicity, 2017

Causes of death	**Non-Hispanic White (Total deaths= 2,179,857)**		**Non-Hispanic Blacks (Total deaths= 335,667)**		**Non-Hispanic American Indian/ Alaska Native (Total deaths= 19,918)**		**Non-Hispanic Asian/ Pacific Islander (Total deaths= 72,598)**		**Hispanic (Total deaths= 197,249)**	
	Rank	% of total deaths	Rank	% of total deaths	Rank	% of total deaths	Rank	% of total deaths	Rank	% of total deaths
Diseases of the heart	**1**	23.3	**1**	23.3	**1**	18.1	**2**	21.3	**2**	20.0
Malignant Neoplasms	**2**	21.4	**2**	20.8	**2**	17.0	**1**	25.1	**1**	20.6

Chronic lower respiratory diseases	**3**	6.4	**6**	3.3	**6**	4.9	**8**	2.8	**8**	2.8
Unintentional injuries	**4**	5.8	**3**	5.9	**3**	11.6	**4**	4.5	**3**	8.5
Cerebrovascular diseases	**5**	5.0	**4**	5.7	**7**	3.8	**3**	7.5	**4**	5.5
Alzheimer's Disease	**6**	4.7	**9**	2.7	**10**	2.0	**6**	3.6	**6**	3.7
Diabetes Mellitus	**7**	2.5	**5**	4.4	**4**	5.8	**5**	4.2	**5**	4.7
Influenza and Pneumonia	**8**	2.0	**12**	1.7	**9**	2.0	**7**	3.1	**11**	2.0
Intentional self-harm (Suicide)	**9**	1.7	**16**	0.9	**8**	3.1	**11**	1.9	**9**	2.0
Nephritis, Nephrotic Syndrome, and Nephrosis	**10**	1.6	**8**	2.8	**11**	1.7	**9**	2.1	**10**	2.0
Chronic liver diseases and Cirrhosis	**11**	1.4	**14**	1.0	**5**	5.5	**14**	1.0	**7**	3.2
Septicemia	**12**	1.4	**10**	2.0	**12**	1.5	**12**	1.2	**13**	1.5
Essential Hypertension and Hypertensive Renal Disease	**14**	1.1	**11**	1.9	**14**	1.0	**10**	2.0	**14**	1.4
Assault (Homicide)	**20**	0.3	**7**	3.0	**13**	1.4	**18**	0.5	**12**	1.6

Data source: (Heron, 2019) *Deaths: Leading Causes for 2017*

For the top cause of mortality, that is, cardiovascular diseases, the disparity associated with the age-adjusted death rates by race and ethnicity is striking. In the year 2017, the highest death rate (208 per 100, 000 population) was observed for the non-Hispanic African Americans, followed by non-Hispanic White population (169.8 per 100, 000 population), Hispanics (114.1) and non-Hispanic Asian or Pacific Islander (85.5 per 100,000). From 1999 to 2017, the cardiovascular mortality rates have declined for all racial and ethnic groups. More recent years have seen a slower decrease in the rates. It is important to note that the non-Hispanic black persons were more than twice as likely to die of heart diseases as compared to non-Hispanic

Asian/Pacific islander in 1999 and it was still true in the year 2017. The disparities in cardiovascular mortality have persisted even though the rates of mortality have decreased over the years (Centers for Disease Control and Prevention, 2019a).

Maternal Mortality in The United States

Maternal Mortality is a global health issue as well as a human rights issue, with 295,000 maternal deaths in 2017. This equates to 810 women dying each day due to preventable causes related to pregnancy and childbirth. A maternal death is a death of a woman while pregnant or within one year of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related or aggravated by the pregnancy or its management but not from accidental or incidental causes. The maternal mortality ratio (MMR) is the number of maternal deaths over a year per 100, 000 live births and it is often used as an indicator of the nation's health. In the year 2000, the United Nations (UN) member states pledged to work towards a series of Millennium Development Goals (MDGs). Sustainable Development Goals (SDGs) build on the momentum generated by the MDGs. SDG Target 3.1 is to reduce the global MMR to less than 70 deaths per 100,000 live births by the year 2030 (World Health Organization, 2015). The global maternal mortality rate decreased by 38% from 1990 to 2017, from 342 deaths to 211 deaths per 100,000 live births. Although the U.S. participated in the Millennium Development Goals (MDGs) and has more spending than any other country in hospital-based maternity care, the maternal mortality rate in the USA has increased from 17 deaths to 26 deaths per 100, 000 live births from 1990 to 2015. The United States has performed worse than most other developed nations in preventing pregnancy-related deaths. The U.S. is also did not meet the Healthy People 2020 goal to reduce maternal mortality by 10% from 2007 to 2020 ((Maternal Health Task Force, 2015; United Nations Children's Fund, 2019; World Health Organization,

2015). The Healthy People 2030 data indicates baseline maternal mortality rate of 17.4 per 100, 000 live births in 2018. The MICH-04 objective of the Healthy People 2030 (Reduce maternal deaths) has target of decreasing the maternal deaths to 15.7 per 100, 000 live births (Office of Disease Prevention and Health Promotion, n.d.a)

A death is considered pregnancy-related if it occurred during or within 1 year of pregnancy and was caused by a pregnancy complication, a chain of events initiated by pregnancy, or aggravation of an unrelated condition by the physiologic effects of pregnancy. Approximately 700 women die from pregnancy or pregnancy related complications each year in USA and significant racial and ethnic disparities exist in pregnancy-related mortality. 3 in 5 pregnancy related deaths could be prevented. During 2007–2016, a total of 6,765 pregnancy-related deaths occurred in the United States, with the overall Pregnancy related mortality rate (PRMR) of 16.7 per 100, 000 live births. From 2007-2008 to 2015-2016, in USA, Pregnancy related deaths per 100, 000 live births (PRMR) increased from 15.0 to 17.0. Non-Hispanic African American and Non-Hispanic American Indian/Alaskan Native women (AI/AN) experienced higher PRMR (40.8 and 29.7, respectively) than White women (12.7 per 100, 000 live births). Pregnancy Related Mortality Rate (PRMR) increased with maternal age. For women over 30 years, PRMR was 4 to 5 times higher for African American and AI/AN women as compared to their White counterparts. The Black-White disparity was lowest among age-group <20 and highest among age group 30-34 years. The AI/AN-White disparity was lowest among women aged 20-24 years and highest among women aged 35-39 years. Racial and ethnic disparities persisted at all educational levels. The PRMR for African American and AI/AN women with at least some college education was higher than those of all other racial/ethnic groups with less than a high school diploma. The Pregnancy Related Mortality Rate (PRMR)

among black women with a completed college education or higher was 1.6 times that of white women with less than a high school diploma. Among women with a college education or higher, the PRMR for black women was 5.2 times that of their white counterparts ((Petersen et al., 2019)

Infant Mortality in The United States

Infant mortality is the death of an infant before first year of age. Infant mortality rate is also considered a key indicator of maternal and child health as well as a prominent marker of the overall health of society. In the year 2018, the infant mortality rate in U.S. was 5.7 infant deaths per 1000 live births. More than 21,000 infant deaths occurred in the year 2018. For that year, the infant mortality rate for the Non-Hispanic African Americans was 10.8 per 1000 live births, followed by Native Hawaiian or Pacific Islanders (9.4), followed by American Indian/Alaska Native (8.2). Infant mortality rate for the Non-Hispanic Whites was 4.6 per 1000 live births and it was the lowest among Asians (3.6 per 1000 live births). Infant mortality rate for Hispanics was 4.9 per 1000 live births (Centers for Disease Control and Prevention, 2020d).

Although the United States and other economically comparable countries have seen decreases in the infant mortality rates in recent years, the U.S. has seen slower improvements and significant disparities exist by geographic locations, race, ethnicity, age of mothers and educational and social status. The United States currently ranks 33rd among 36 economically comparable nations in terms of infant mortality. Within the U.S., the largest proportion of the infant deaths occur in the neonatal period (day 1 to 27 days of life). As described above, non-Hispanic Black mothers experience the highest rates of infant deaths among all racial and ethnic groups. They also suffer from the highest rates of pre-term births and low birth weight, which are also the leading causes of infant mortality. Although studies have consistently indicated linkage

between socioeconomic disadvantage and risk for adverse health outcomes, more recent studies identify structural racism as primary risk factor for African American mothers and their infants to explain the significant disparities in Black-White maternal and infant health and adverse health outcomes (Kamal et al., 2019).

Morbidity in The United States and Disparities

Morbidity is defined as 'any departure, subjective or objective, from a state of physiological or psychological well-being. It is the state of being sick or ill or having a disease, either physical or mental. In short, morbidity is departure from good health. Within U.S., morbidity is monitored by examining prevalence and incidence rates. The most common ways to examine morbidity are surveys conducted by federal agencies such as the National Health Interview Survey (NHIS), Behavioral Risk Factor Surveillance System (BRFSS), National Health and Nutrition Examination Survey (NHANES) etc. (LaVeist, 2005).

Prevalence of Hypertension, Diabetes, Cholesterol, and Physical Activity. When we consider prevalence rates for hypertension and obesity, minority populations, especially African American/Black have higher rates than the non-Hispanic White population. National Health and Nutrition Examination Survey data stated that in 2015-16, non-Hispanic black adults over 20 years were most likely to have hypertension as compared to other racial and ethnic groups (42.1% Vs. 28.7 Non-Hispanic White, 29.4% Hispanics, 27.2% Asian). Similarly, Hispanic and Non-Hispanic Black adults over 20 years of age were most likely to have obesity in 2015-16. Hispanic and non-Hispanic Black adults were most likely to have diabetes. Hispanics, non-Hispanic Whites, non-Hispanic Blacks and non-Hispanic Asian adults over 20 years of age were equally likely to have high cholesterol in 2015-16 ((Centers for Disease Control and Prevention, 2019a). For diabetes, American Indian or Alaska Native population group has the highest

prevalence (14.7%) followed by the Hispanic population (12.5%) as compared to other minority and Non-Hispanic White population. Diabetes is also a significant population health issue as 34.2 million Americans or 10.5% of the population had diabetes in the year 2018. Among these 34.2 million, 26.8 million were diagnosed and 7.3million undiagnosed. Diabetes is also the seventh leading cause of deaths in the United States (American Diabetes Association, n.d.).

For overall individual health and well-being, it is important to have good nutrition, physical activity, and a healthy body weight. Most Americans, however, lack necessary physical activity levels to maintain good health with only half of the adults getting physical activity to reduce and prevent chronic diseases. Currently, inadequate physical activity costs 117 billion dollars in health care costs in America. One in ten premature deaths can be prevented by being adequately physically active (Centers for Disease Control and Prevention, 2019b).

Tobacco Use. Cigarette smoking remains the leading cause of preventable disease, death, and disability. In 2019, 34.1 million adults (14% of the population) indicated that they were current smokers. Among them, 15.3% were men and 12.7% were women. Each day, about 1600 youth try their first cigarette. More than 16 million Americans live with a smoking related disease. Cigarette smoking accounts for more than 480,000 deaths per year or 1 in 5 deaths(Centers for Disease Control and Prevention, 2020a; Centers for Disease Control and Prevention, 2020c). It is also one of the costliest public health challenges with more than $300 billion dollars in costs including $170 billion in direct medical care costs, $156 billion in lost productivity and $5.6 billion in lost productivity due to second-hand smoke exposure ((Centers for Disease Control and Prevention, 2020b).

There are also disparities in tobacco use. Cigarette smoking rate was the highest among non-Hispanic American Indians/Alaska natives (20.9 per 100), followed by non-Hispanic Whites

(15.5%), non-Hispanic Blacks (14.9%) and Hispanics (8.8%). The lowest reported cigarette use is among non-Hispanic Asians (7.2%). Cigarette smoking was also highest among people with a general education development certificate (GED) and lowest among people with a graduate degree. Socioeconomic status, geographic location, insurance, and disability status as well as mental health disorders are associated with tobacco use (Centers for Disease Control and Prevention, 2020a).

Cancer. Cancer is the second leading cause of deaths in the United States. The American Cancer Society estimated about 1.8 million new diagnosed cases and 606, 520 cancer deaths for the year 2020 (American Cancer Society, 2020). Although cancer affects all population groups within the United States, certain groups bear a disproportionate burden of cancer due to social, environmental, and economic disadvantages. Blacks/African Americans have higher death rates than all other racial/ethnic groups for many (although not all) cancer types. Despite having similar prevalence rates of breast cancer, Black/African American women are more likely to die from the disease as compared to the non-Hispanic White women. Hispanic and Black/African American women also have higher rates of cervical cancer as compared to women of any other racial/ethnic groups and Black/African American women have the highest mortality from the disease. Black/African American men have highest prostate cancer mortality as compared to any other racial/ethnic groups. They also have lower prostate cancer screening rates. American Indians/Alaska natives have higher mortality from kidney cancer as compared to any other racial/ethnic groups. They also have the highest rates of liver and intrahepatic bile duct cancer. Cancer disparities are the result of interplay among various factors including the social determinants of health that govern access to care and health outcomes along with behaviors, biology, and genetics (National Cancer Institute, 2016)

Activities of Daily Living. Activities of Daily Living (ADLs) are the basic tasks of everyday life. These serve as an important indicator for the health status of the population. Impairment of ADLs is closely associated with several chronic health conditions. Although ADL difficulties have been reported in persons of all ages, they are especially prevalent among the elderly. In this age-group, especially among eighty-five years and above, the measurement of ADLs was significant predictor of admission to nursing home, use of home care, hospital services, living arrangements, overall Medicare expenditures and mortality (LaVeist, 2005). When age-adjusted distribution of ADLs was considered due to one or more chronic conditions, the highest rates are reported among about American Indian or Alaska Native (19.8%) followed by African American/Black (16.3%). When we consider age-adjusted percentage of both, ADLs, and Instrumental Activities of Daily Living (IADL) among people aged 18 and over, American Indian/Alaska Native population had the highest rates as compared to any other population groups (National Health Interview Survey, 2018)

Healthcare Disparities

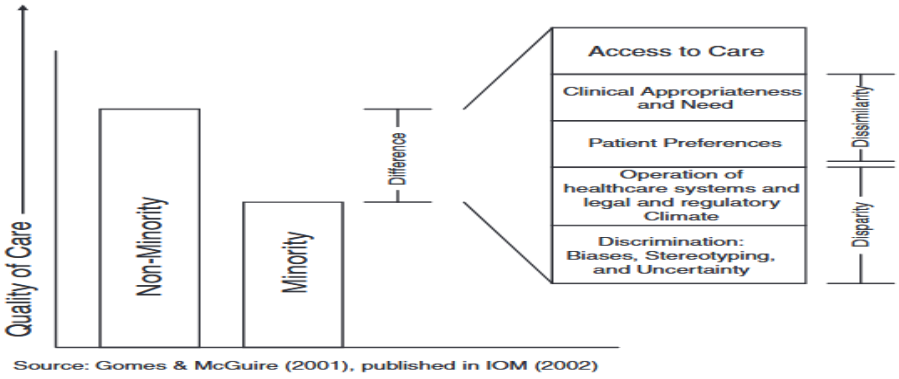
Health care disparities can be defined as differences among population groups in the availability, accessibility, and quality of healthcare services aimed at prevention, treatment, and management of diseases and their complications, including screening, diagnostic, treatment, management, and rehabilitation services (Rana, n.d.). Health care disparities can also be defined as the differences between groups in health insurance coverage, access to and use of care and quality of care.

In the year 2002, the groundbreaking report titled' Unequal Treatment: Confronting Racial and Ethnic Disparities of Health Care' was published by then Institute of Medicine (IOM). The report focused on differences in the quality of care by race and ethnicity as a

subsection of the health care disparities that were not due to access-related factors or clinical needs, preferences, and appropriateness of interventions. The conclusions of the study affirmed the existence of racial and ethnic disparities in health care and stated them as unacceptable. The report concluded that health care disparities occur and continue to persist in the context of historic and contemporary socioeconomic inequality. The report also concluded that there were many sources that contribute to health care disparities including health care systems, patients, providers, and utilization managers (LaVeist, 2005). The figure below shows the model of health care disparities that was used to explain the health care disparities in the IOM report.

Figure 2

Model of Health Care Disparities



This model stated that there were differences in the quality of care received by the minority and non-minority population groups, with the dominant/non-minority group (non-Hispanic White) receiving better quality of care. These differences could be categorized into two groups: disparities and dissimilarities based on the cause. If the differences were a result of systemic injustices, they were classified as disparities. Those differences that result due to patient preferences or choice, were classified as dissimilarities (LaVeist, 2005; LaVeist, 2011). This IOM model considered health care access and utilization of health care services as special case

as they had components that were part of dissimilarities and disparities. Racial and Ethnic differences in health care access and utilization are discussed briefly below.

Racial and Ethnic Differences in Access and Utilization of Health Care

The differences in the access and use of health care could be viewed in part as disparity (result of injustices) and in part as dissimilarities (not due to injustices). These differences in access to and use of health care services were largely due to differences in insurance coverage and socioeconomic inequities (LaVeist, 2005). In the behavioral model developed by Dr. Ronald Andersen, the enabling factors, predisposing factors, and patients' needs for health care were considered as the determining factors to explain the utilization of health care services. Enabling factors included structural or material resources such as insurance coverage that facilitated or hindered the utilization of health services. Predisposing factors included patients' inclination (attitudes that were influenced by experiences and cultural beliefs) to use said services and lastly, the need for health care referred to patients' perceptions/perceived need because of individual health status, duration, and severity of their health condition(s) (LaVeist, 2005).

Health Insurance Coverage

According to the estimates from the (National Health Interview Survey, 2018), about 30.4 million individuals of all ages were uninsured (9.4%), about 18.2 million fewer as compared to those in the year 2010. Among adults aged 18-64 years, there were 13.3% uninsured. Among those insured, 19.4% had public health insurance and 68.9% had private insurance. Among children aged 0-17 years, 5.2% were uninsured. Among those insured, 41.8% had public insurance and 54.7% had private insurance. In the year 2018, the percentage of uninsured adults increased to 10.3% from 9.3% among those aged 45-64 years. Insurance coverage varied by race

and ethnicity in the year 2018; 26.7% Hispanics, 15.2% non-Hispanic Blacks, 8.1% of non-Hispanic Asians aged 18-64 years lacked health insurance at the time as compared to 9.1% of non-Hispanic Whites. Significant decreases in non-insurance rates have been observed in these minority population groups from 2013 to 2018 with the Hispanic adults having the most percentage point decrease from 40.6% in the year 2013 to 26.7% in 2018 (Cohen et al., 2019).

Availability of and Access to Healthcare Services

Healthy People 2020 stated that improving access to healthcare services depended on provision of usual and ongoing source of care. People with usual source of care had better health outcomes, lower costs, and fewer disparities. The primary emphasis was placed on having a primary care provider (PCP) and access to and use of preventive services including access to emergency medical services (Healthy People, 2020). According to the early estimates for Health Care Services use from the 2019 National Health Interview Survey, the percentage of persons with a usual place to go for medical care was 87.6%. The percentage of adults above 18 years of age who had a doctor's visit in the past 12 months was 84.9%, and about 21.8% of adults over 18 years had an emergency department visit in the past 12 months. About 9.5% of adults 18 and above were counseled by a mental health professional in the past 12 months. About 65% of adults had a dental health exam or cleaning and about 88% had their blood pressure checked in the past 12 months. The percentage of adults above 18 who were vaccinated for influenza was 46.8 percent (Clarke et al., 2020).

Regarding the 2019 National Health Interview Survey estimates of access to health services, about 8.3% of adults over 18 years of age didn't get needed medical care due to cost in the past 12 months. About 4.3% of adults didn't get the needed mental health care due to cost and about 9.7% adults didn't take the prescribed medication to save money in the past 12 months

(Clarke et al., 2020). When the delay or non-receipt of care by race and ethnicity was considered, about 10.9% of non-Hispanic Blacks did not get the needed medical care due to cost, followed by 10.1% of non-Hispanic Whites, 9.3% American Indian/Alaska Natives and about 5.1%Asians. When delay or non-receipt of prescription drugs due to cost was considered, the highest percentage was observed among Native Indians/Alaska Natives (18.6%), followed by non-Hispanic Blacks/African Americans (15.8%) and non-Hispanic Whites (10.8%). Non-Hispanic Asians had the lowest percentage of non-receipt of prescription drugs. The highest percentage of non-receipt of dental care due to cost was seen among the non-Hispanic Whites (11.7%), followed by non-Hispanic Blacks (11.1%) and American Indian/Alaska Natives (10.4%) (National Center for Health Statistics, 2019).

The Health Resources and Service Administration (HRSA) focused on efforts to advance evidence-based, coordinated, comprehensive primary and preventive health care services that were outcome oriented, patient and family-centered. The strategic plan of HRSA from 2019-2022 included the goal to improve access to quality health services. The objectives towards this goal included increasing and improving the quality of health care services, systems, and infrastructure; improving the quality and effectiveness of health care services and systems; and connecting the HRSA patient populations to primary and preventive care services (Health Resources and Services Administration, 2017).

Factors Affecting Health Disparities and Health Care Disparities

Social Determinants of Health

Through its focus on social determinants of health, Healthy People 2020 addressed the following questions: Why some people are healthy, and others are unhealthy, and how to create a society where everyone has a chance to live a long and healthy life. Healthy People 2020

explored these questions by developing objectives that focused on the associations between biology, behavior, social conditions and policies, and health services. It also utilized the ecological approach that emphasized individual as well as population level determinants of health and interventions.

The social determinants of health (SDOH) are a range of personal, social, economic, and environmental factors that influence the health status of an individual as well as of populations. The social determinants of health can be defined as the conditions/environments where people are born, live, learn, play, worship and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. These determinants can be categorized into 5 broad groups: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context. The social determinants of health are also predominant factors that influence health disparities and inequities (Office of Disease Prevention and Health Promotion, n.d.b).

The WHO Commission on Social Determinants of Health led by Sir Michael Marmot was established in the year 2005 to support countries and global health partners in addressing the social factors leading to ill health and health inequities (World Health Organization, n.d.). The commission published its report in the year 2008 titled ‘Closing the gap in a generation: health equity through action on social determinants of health.’ The report emphasized that social justice is a matter of life and death, that inequities in health, especially those avoidable are a result of the differences in conditions and environments shaped by political, social, and economic influences. The report is based on the ideology that the development of a society, rich or poor can be judged by the quality of its population’s health and looking at how fairly health is distributed across the social spectrum along with protections afforded from disadvantage resulting from ill-health. The

Commission on SDOH was established in accord with social justice and it aimed to collect evidence on ways to achieve health equity and strived to create a global movement for the achievement of health equity. The Commission took a holistic view of the SDOH and concluded that "the poor health of the poor, the social gradient of health within countries, and the marked inequities between countries are caused by the unequal distribution of power, income, goods, and services, globally and nationally. This unfairness in circumstances has an immediate as well as long term impact on individuals' chances of leading a flourishing life. This unequal distribution of experiences that are detrimental to health is not a natural phenomenon, but a result of the toxic combination of poor social policies, unfair economic arrangements, and bad politics. These daily life conditions and structural determinants constitute the social determinants of health and predominantly influence the health inequities between and within countries (WHO Commission on the Social Determinants of Health, 2008).

The United States has relatively poor health of overall population with the burden of ill health unequally distributed. Health disparities or inequities, which are the differences in health that are avoidable and unjust, are greater in the United States than in peer countries which are economically comparable. People who are disadvantaged have worse health from the moment they are born and throughout their life. Socioeconomic disparities contribute to other disparities to a great extent, but they don't fully account for them. As socioeconomic factors are major and modifiable factors to disparities, addressing them can be an effective way of eliminating disparities. Health disparities are not inevitable. Actions that reduce social disadvantage can reduce the gaps in health of the populations. U.S. health policy has largely ignored the powerful effects of social and behavioral factors on health. U.S. spends far more money per capita on health services and far less on social services, as compared to any other economically

comparable countries. The nations who spend more money on social services as compared to health care spending, have populations that live longer and have better health. The poor health status of U.S. populations in comparison to similar countries, the existent and persistent disparities and, the fluctuations in health and inequalities in accordance with policy lead changes in social conditions indicate the importance of policies addressing the social determinants of health. Such policies have the potential to eliminate disparities and to improve the health and longevity of all Americans (Adler et al., 2017).

The following table indicates the statistics related to the social determinants of health comparing the non-minority and minority populations within United States. The information contained within the table is retrieved from the U.S. Department of Health and Human Services, Office of Minority Health.

Table 2. 3

Statistics related to the Social Determinants of Health

	Non-Hispanic White	**Hispanics/Latino**	**African American/ Black**	**Asian**	**American Indian/ Alaska Native**	**Native Hawaiian/ Pacific Islander**
Composition	197,181,177 61% of total U.S. population	58.8 million (18.1 % of total US) population **Largest minority population group in the U.S**	41.4 million (12.7 % of total US population) **Second largest minority group**	18.2 million (5.6 % of total US population)	5.6 million people (1.5% of total US Population)	**1.5 million** (0.4 % of total US population
Language Fluency		72% speak language other than English		Overall, 36.2% Asians not fluent in English	26.9 % American Indians/Alaska Natives spoke a language	27.6% speak language other than

				74.4% spoke language other than English at home	other than English at home	English at home
Education	**High school Diploma**: 92.9%	68.7%	86%	86.9%	83.8%	89.4%
	Bachelor's degree or higher: 35.8%	16%	21.4%	53.8%	19.6%	23.3%
	Graduate/ Advanced professional degree: 13.8%	5%	8.1%	23.6%	6.8%	6.9%
Economics	**Avg. household income**: $65,845	$49,793	$ 40, 165	$ 83,456	$45,448	$ 60, 734
	% living at poverty level: 9.6%	19.4%	22.9%	11.1%	21.9%	15.4%
	Unemployment rate: 4.2%	6%	9.5%	4.2%	Not available	5.4%
Insurance coverage	**Uninsured**: 5.9%	17.8%	9.9%	6.6%	14.9%	8.3%
	Public: 33.7%	38.2%	43.9%	26.3%	43.2%	33.5%
	Private: 75.4%	49%	55.5%	73.7%	51.3%	66.9%

The Healthy people 2030 addresses the social determinants of health through one of five overarching goals specifically dedicated to SDOH: "Create social, physical, and economic environments that promote attaining the full potential for health and well-being for all." In accordance with the goal, Healthy People 2030 sets many objectives related to SDOH that highlight the importance of these factors in improving the health of the population and in

reducing health disparities (Office of Disease Prevention and Health Promotion, 2020; Office of Disease Prevention and Health Promotion, n.d.b).

Mistrust of Healthcare

Mistrust of the healthcare system can perpetuate the existing disparities and have adverse consequences. Trust between providers and patients plays a key role in providing quality care to patients and in building an efficient health care system, but social and historical contexts, provider and patients' attitudes and biases can all serve as obstacles in the way of patients seeking care when needed and patients being properly treated when they seek care. Medical mistrust among Blacks/African Americans is a long-held attitude. It stems not only from the centuries old maltreatment and discrimination, but also from current, everyday experiences (Joszt, 2019). This medical mistrust results in underutilization of health services including preventive services such as cancer screenings and vaccinations. This was especially visible during the vaccination efforts for Covid-19 where medical mistrust hindered the acceptance of vaccines among minority population groups. This medical mistrust also results in lesser likelihood of participation in research, reduced inclination to donate organs or biological materials. This mistreatment also results in concerns about harmful medical experimentation and unwitting enrollment leading to harm. Factors such as access to care, living in segregated neighborhoods and consequence of historical segregation, daily life experiences of discourteous treatment can add to the mistrust (LaVeist, 2005).

In a study conducted by LaVeist et al. (2000) to objectively assess the relationship between patients' race, perceptions of racism and medical mistrust and their impact on satisfaction with care among cardiac patients, the researchers found that African American patients were consistently less likely to express satisfaction with the care they received, and

significantly more likely to perceive racism and more likely to express medical mistrust. The researchers also found that patients' perceptions on racism and medical mistrust were the significant predictors of satisfaction with care and not patients' race. This was a promising finding as it entailed that if interventions were to develop to improve the patient experiences regarding racism and mistrust, it might be possible to reduce the racial differences in satisfaction with care and possibly reduce disparities (LaVeist et al., 2000).

Although Tuskegee study is one of the best-known examples of the mistreatment of the African Americans in health care, in a study conducted by Brandon, Isaac and LaVeist (2005) to explicitly assess the racial differences in the knowledge of Tuskegee study and its relationship with medical mistrust, the researchers found that there was little difference in the knowledge between White and Black participants with most participants unaware and lacking accurate knowledge. More importantly, the researchers found that Black participants were significantly more likely to believe that such a study would occur today, and they also believed that the Tuskegee researchers infected the participants. The researchers concluded that Black race and not the knowledge of Tuskegee was predictive of medical mistrust (Brandon et al., 2005). The African American mistrust of medical care arises from a general mistrust of the societal institutions which is fueled by the experiences of discrimination and devaluation, further fostering the skepticism and mistrust. As long as high levels of mistrust exist among African American population, there may be continued underutilization of health care services. This attitude of detachment may also complicate the efforts to eliminate disparities.

Attitudes and Biases

In general, implicit race biases are prevalent within the United States and it is not surprising that physicians would harbor them as well. These biases are the result of neural and

cognitive processes that reflect evolutionary as well as social orientations. The implicit biases are formed over time through sociocultural learning that consists of explicit communication and implicit messaging. It is important to understand that implicit biases are subconscious and don't imply overt racism (Green et al., 2007). The study conducted by Green et al. in 2007, was the first to measure physicians' unconscious racial bias to test whether it predicts physicians' clinical decisions. The objective of the study was to test whether physicians show implicit race bias and whether the magnitude of such bias predicts thrombolysis recommendations for Black and White patients with acute coronary syndromes. The researcher in this study utilized a web-based survey instrument, a clinical vignette with patient race assigned randomly to participants and three Implicit Association Tests (IATs): Race IAT, Race cooperativeness IAT, and Race Medical Cooperativeness IAT. A total of 220 residents from Internal Medicine and Emergency Medicine specialties participated in the study. The findings of the study showed that residents diagnosed Black patients with coronary artery disease more as compared to White patients but had similar thrombolysis treatment rates for both groups showing a racial disparity: there was equal treatment in the face of unequal diagnosis rates. Although the physicians didn't indicate any explicit biases (racial preference/ cooperativeness by race); on the IATs, most non-black physicians demonstrated some degree of bias favoring whites over blacks. The study was designed to and was successful in showing that physicians' implicit biases influenced their decisions about important treatment modalities such as thrombolysis. The study findings were significant and highlighted that physicians like everyone else may harbor unconscious biases preferences and stereotypes that influence clinical decisions. The researchers also stated the need for more studies to determine the extent to which unconscious racial biases contribute to health

care disparities. The researchers also emphasized explicit attention to the issue as implicit biases, by very nature, are hidden from conscious awareness (Green et al., 2007).

In their systematic review, the authors (Dehon et al., 2017) analyzed the evidence regarding the relationship between physician implicit racial bias and clinical decision making, especially examining the studies on implicit racial bias within the EM physicians and emergency care. This systematic review involved 9 studies published between 2007-2016. The authors summarized the following evidence on the racial disparities seen within the Emergency Department: Non-White patients presenting with abdominal pain in the emergency department were 22% to 30% less likely to receive analgesic medication and 17% to 30% less likely to receive narcotic analgesics compared to White patients. The evidence also suggested that Black patients with chest pain were less likely to receive laboratory evaluations, electrocardiograms, and chest x-rays for acute coronary syndrome (ACS), and those with identified ACS were less likely to receive percutaneous coronary intervention. Non-White patients were also likely to suffer more wait times and were less likely to be admitted. Evidence also suggested that decision making based on heuristics, biases, and stereotyping, in contrast to rational decision making, was more likely to occur under certain conditions such as time pressure, brief encounters, lack of solid knowledge/information to make a decision, need to make quick judgements, task complexity, cognitive overload, busyness and fatigue (Dehon et al., 2017; van Ryn & Burke, 2000). In the systematic review conducted by Dehon et al. (2007), seven of the nine studies found that implicit racial biases did not influence clinical decision making, but two studies reached different conclusions. The authors stated that per literature, many physicians, regardless of specialty, demonstrated an implicit preference for white people, still, the authors concluded in

their review of 9 studies that this bias did not appear to impact their clinical decision making (Dehon et al., 2017).

The systematic review conducted by FitzGerald & Hurst (2017) that examined healthcare professionals implicit biases towards patients included 42 studies. In this review that investigated studies on implicit racial/ethnic bias along with age, gender, and weight related bias, all the studies that examined correlations, found a significant positive relationship between level of implicit bias and lower quality of care. Thirty-five articles in this review found evidence of implicit bias among healthcare professionals. The authors emphasized the need for the healthcare profession to address the role of implicit biases in disparities in healthcare. The authors also stated the need for more research in actual care settings and a greater homogeneity in methods employed to test implicit biases. The studies incorporated in this review analyzed the implicit bias using Implicit Association tests (IAT), clinical vignettes, and the use of psychologists specializing in implicit bias detection. The authors stated that the studies that combined IATs and a measure of quality of care were most convincing (FitzGerald & Hurst, 2017).

Racism in Health Care

In the year 1966, at a convention of the Medical Committee for Human Rights held in Chicago, Dr. Martin Luther King Jr. said, “We are concerned about the constant use of federal funds to support this most notorious expression of segregation. Of all the forms of inequality, injustice in health is the most shocking and the most inhuman because it often results in physical death.” Dr. Martin Luther King further added “I see no alternative to direct action and creative nonviolence to raise the conscience of the nation.” As these statements and Dr. Martin Luther King Jr.’s lifework suggest, his focus was on injustice in health, on racism, poverty, housing, and

education. Most importantly, he suggested that this injustice was so blatantly cruel as the ultimate result was death. (Physicians for National Health Program, (n.d.)).

Race-related differences in health outcomes are frequently documented but the mechanisms through which race contributes to these differences remain complex and poorly explained. Although race is not a biological construct, it is a powerful social construct that is utilized to capture the social classification of people in a race-conscious society like the United States and as a proxy to indicate socioeconomic status and culture (Barr, 2014). The racial classification has a profound impact on the daily experiences, health, and health outcomes of people. For this reason, investigators now hypothesize and acknowledge the race-differences in health outcomes as the consequences of racism (Jones, 2000).

Based on the framework developed by Dr. Camara Phyllis Jones, racism can be understood on three levels: Institutional, personally mediated, and internalized. Institutionalized racism can be defined as differential access to goods, services, and opportunities of society by race. Institutionalized or structural racism is normative or sometimes legalized. It is manifested as inherited disadvantage. Institutionalized racism results in both: differential material conditions such as access to education, housing, employment, and health care, and differential access to power in terms of information, resources, and voice. Structural racism has influenced the association between socioeconomic status and race. Bailey et al. (2017) argued that although structural racism was a key-determinant of population health, it was not often found in medical literature or taught to students in medical sciences. The authors also stated that those who were responsible for defining and responding to public discourse on this issue, remained resistant to identify racism as the root cause of inequities (Bailey et al., 2017). The literature investigating racial discrimination and health is scarce and- to understand, prevent and address the effects of

structural racism, there is need for a broad societal view to identify and investigate how structural racism contributes to poor health. There is rich literature focusing on structural racism in social sciences, but there is a lack of adequate integration of this research into medical and scientific literature geared towards clinicians and other health professionals. The authors argued that to advance health equity and population health, we need to focus on structural racism as the key-determinant of health (Bailey et al., 2017).

Personally mediated racism is defined as prejudice and discrimination, where prejudice means differential assumptions about the motives, abilities, and intentions according to others' race, and discrimination means differential actions based on others' race. Personalized racism can be intentional or unintentional and it can include acts of commission and acts of omission (Jones, 2000). Internalized racism can be defined as acceptance of the negative messages of their abilities and intrinsic worth by the members of the stigmatized races (Jones, 2000).

In recent time, there has been notable growth in the research that examines racism and its relationship with health. A quick search of literature on PubMed on racism and health shows just about 2 articles published on this topic in the year 2000 to 98 articles published in the year 2020. Racism is now identified as the fundamental cause of adverse health outcomes for racial and ethnic minorities and for persistence of racial and ethnic health inequities in health (Williams et al., 2019). It is important to understand the historic context of racism/disparities in health care. In the early twentieth century, separated health care facilities were developed for African Americans, mainly by churches. Most existing medical schools at the time didn't admit African Americans so separate medical schools for Blacks were created. These separate medical schools and hospitals lacked adequate funding as well as resources. In the predominantly White medical system at the time, the interactions of African Americans occurred through segregated wards and

the nature of those interactions usually was discourteous. This lack of adequate medical education, resources, treatment facilities combined with the discrimination within the existing facilities and the nature of interpersonal encounters produced inequalities in health care. These factors as well as glaring examples of mistreatment such as the Tuskegee study have contributed to the racial and ethnic disparities in access and utilization of health services as well as mistrust of the medical care system, research institutions and endeavors ((LaVeist, 2005).

Role of Physicians

Despite the enormous progress made to improve the health of the nation within the last few decades in terms of gain in life expectancy as compared to that in 1950s, the United States still continues to face new health challenges. The morbidity and mortality associated with chronic diseases, HIV/AIDS and health conditions like obesity, diabetes continue to threaten the nation's health along with challenges such as the opioid epidemic and antibiotic resistance. The year 2020 was unprecedented in terms of the Covid-19 pandemic and the events that shook the nation such as the killing of George Floyd, Breonna Taylor, and Ahmaud Arbery. These events as well as the differential health outcomes of Covid-19 renewed the focus on racism as a population health issue and the health of the disadvantaged/underserved/minority population groups. Rising costs of healthcare, differential insurance coverage and under-utilization of health care services add to the problem. To effectively address and intervene these threats, to effectively address health disparities and health care disparities, a concerted and coordinated effort by the public health system, healthcare system and societal system is required which is central to the population health approach.

Population health builds on the methods of health care, traditional public health, and public policy interventions. It is rapidly becoming the overarching umbrella of concepts to

integrate the efforts in these fields into health systems. Health care is characterized by the systems for delivering one-on-one individual health services aimed at prevention, treatment, palliation, and rehabilitation. Traditional public health is characterized by group and community-based interventions directed at disease prevention and health promotion. Lastly, public policy is characterized by interventions that primarily may be non-health related purpose(s) that can have secondary impacts on health (Riegelman, 2020).

A physician has a significant role to play in society that includes improving individual health as well as health of the public (Lockwood, 2004). In the same article, Lockwood stated that to meet the full measure of professional responsibility, a physician not only needed to be skilled at research, teaching and patient care but also needed to serve the community. This thought is embedded in the Hippocratic oath taken by the physicians where they pledge to protect the patients from any harm and injustice. Organizations like Physicians for Social Responsibility (PSR) have been playing a prominent role in engaging physicians on the issues significant to improving population health, especially focusing on environments and their effects on health. Lockwood (2004) also urged the physicians to use the medical knowledge, scientific expertise, and ethical training to work for better public health and be particularly sensitive to the needs of those who were socially and economically disadvantaged (Lockwood, 2004). This approach is especially important as we consider the physicians' role in eliminating health disparities and in achieving health equity and social justice.

In a study on the public roles of the U.S. physicians, especially the role of community participation, political involvement, and collective advocacy, Gruen et al., (2006) found that more than 90% of the physician respondents from a nationally representative sample rated these roles as important, especially community participation and collective advocacy were rated as

very important. In this study, two thirds of physicians who responded had participated in at least one of the three types of activities in the last 3 years. The factors that corelated to high rating of these issues were age, female sex, physician belonging to underrepresented race/ethnicity, and graduation from non-U.S. or non-Canadian medical school. Also, civic mindedness, rural practice, underrepresented race/ethnicity, being a preceptor, medical specialty, practice type and graduation from non-U.S. or non-Canadian medical schools were independently related to physician's civic activity. In this study, it was also interesting to note that when physicians were asked to rate the issues of importance, in the domain of access to care, only 45.5% of the respondents rated cultural responsiveness of healthcare services in ethnically diverse areas as an important issue whereas health insurance for the uninsured was rated as important by 58.1% of the respondents. It is interesting to note that in this study, nutrition, substance abuse, immunizations, and road safety issues were rated as more important as compared to access to care issues, unemployment, and illiteracy (Gruen et al., 2006).The article also provides context to the debate about doctors' professional responsibility to address health related issues beyond providing care to individual patients at the time (Gruen et al., 2006). In the last 17 years since the study was published, there has been wider recognition about the physicians' role in achieving health equity and social change as the population health approach is gaining popularity.

The Danish Commission on Medical Specialists in the year 2000, in their report titled 'Denmark's future medical specialist', described the model that assessed future requirements for medical specialists. The model included seven roles of physicians. These roles were subsequently implemented in the Danish postgraduate medical training program by describing competencies and learning objective for each of the physician roles. In the year 2014, the Danish Health and Medicines Authority revised the descriptions of the seven physician roles to make

them more nuanced to match individual specialties. These descriptions integrated the concepts of ethical aspects and systems thinking into the physician roles. These seven physician roles, as implemented in the Danish postgraduate medical training include: medical expert, collaborator, communicator, manager, health advocate, scholar, and professional. The model provided break-down of the medical activities pertaining to each role on individual, organizational and societal levels and also defined competencies for each physician role at each of these three levels (Danish Health and Medicines Authority, 2014). In the United States, the responsibility to monitor and standardize the graduate medical training is performed by the Accreditation Council for Graduate Medical Council (ACGME).

U.S. Medical Students' and Graduate Medical Students' Enrollment and Graduation rates

For the year 2020-21, there were 94, 205 medical students enrolled in the U.S. medical schools. Out of them, 45, 675 were male and 48, 530 were female students. While the female student enrollment increased from that of 2019-20 (46, 851), male student enrollment decreased slightly from that of 2019-20 (45, 808) (American Association of Medical Colleges, 2020). When we consider the student enrollment by race and ethnicity for the year 2020-21, the distribution was as follows: American Indian/Alaska Native students (183), Asian students (21, 510), Black/African American (7, 126), Hispanic/Latino or Spanish origin (6, 295), Native Hawaiian or Pacific Islander (76), White (45, 738), other (1865), Multiple race/ethnicity (9, 218), Unknown race/ethnicity (938) and Non-US citizen or non-permanent resident (1294) (Association of American Medical Colleges, 2020).

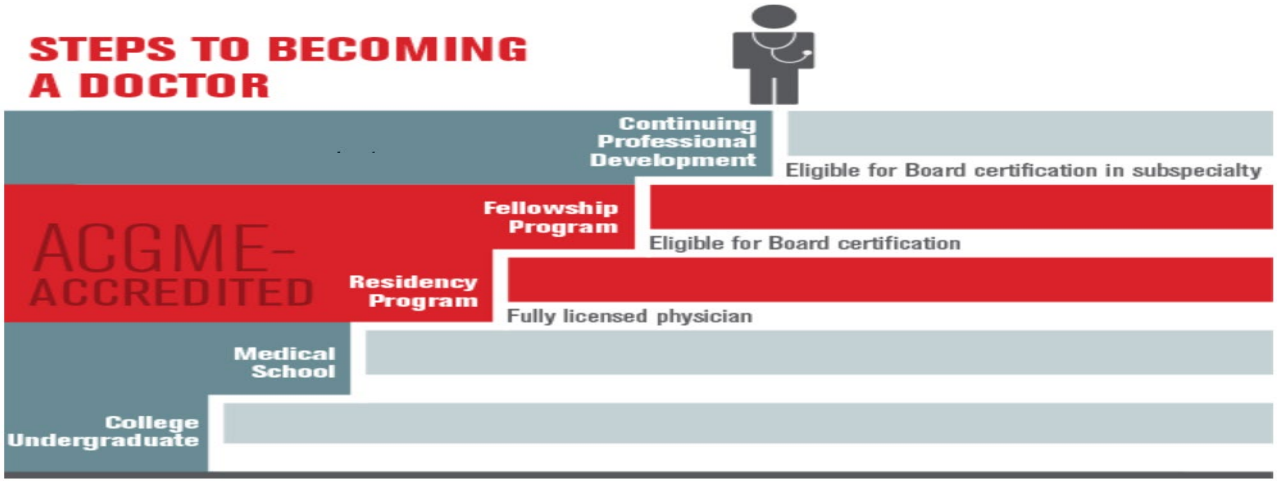
Medical school enrollment increased by 31% since 2002. Combined with first year matriculation rates at the osteopathic schools, medical school enrollment increased by 52% as compared to 2002-03. To counter the projected physician shortage that would adversely affect

patient care, in 2006, American Association of Medical Colleges called on medical schools to increase the first-year enrollment by 30 percent. This target was reached in 2018-19 when the first-year matriculation reached 21,622. During the same period, the osteopathic schools increased their enrollment by 164% which accounted to 8, 124 students enrolled in the first year (Kalter, 2019).

The number of medical graduates increased from 16,000 in 1980-81 to 20, 000 graduates for the year 2018-19. The number of male graduates decreased from 12,000 in 1980-81 to 10, 000 in 2018-19. On the other hand, the number of female graduates consistently increased from 4000 in 1980-81 to about 10, 000 in the year 2018-19 (Association of American Medical Colleges, 2020). The following figure shows the steps to becoming a doctor in the United States.

Figure 3

Steps to Becoming a Doctor in the United States



Source: Accreditation Council for the Graduate Medical Training

Graduate Medical Education (GME)

Graduate Medical Education (GME) refers to the period of training in a particular specialty (residency) or subspecialty (fellowship) following medical school. In the United States, the Accreditation Council for Graduate Medical Education (ACGME) sets and monitors the professional educational standards which are essential in preparing physicians to deliver safe, high-quality medical care to all Americans. It is an independent, not-for-profit, physician-led organization.

Residency or graduate medical education is considered as the essential dimension for the transformation of the medical student to independent practitioner along the continuum of medical education. Residency requires longitudinal, concentrated effort on the part of the resident, and it is a demanding training: emotionally, intellectually, and physically. This experiential, specialty education of physicians occurs within the context of the healthcare delivery system and prepares them to practice independently. During the residency training, the essential learning activity for the residents is patient interaction under the guidance and supervision of faculty members who provide context, meaning and value to these interactions. This supervision provides the foundation for continued professional growth and ensures provision of safe and effective care to individual patients, and the development of residents' knowledge, attitude, and skills to become independent practitioners. One of the core tenets of American Graduate Medical Education is graded and progressive responsibility that allows residents to practice with greater independence as they gain experience and demonstrate growth in their ability to care for patients. Physicians develop skills, attitudes and knowledge leading to proficiency in all domains of clinical competency and enabling them to assume personal

responsibility to care for the individual patients (Accreditation Council for Graduate Medical Education, 2017).

In the academic year 2019-20, there were approximately 12,000 ACGME-accredited residency and fellowship programs within the United States in 157 specialties and subspecialties at approximately 865 sponsoring institutions. One out of seven active physicians within the U.S. were a resident or fellow and there were approximately 145, 000 active full or part-time residents and fellows, among them 117, 839 were active MD residents and 22, 018 were active DO residents (Accreditation Council for Graduate Medical Education, n.d.; American Association of Medical Colleges, 2020).

About 3% of the residents earn their MD and PhD degrees simultaneously. One quarter of those who completed their residencies in the last decade practice in the medically underserved areas across the country. This was more common among early-career physicians belonging to areas like Alabama and Louisiana as compared to those from Iowa or Nevada. The distribution of MD residents by race and ethnicity varied across specialties. Overall, 50.8% of all U.S. citizen MD residents in 2019-20 were White (59, 917), 21.8% were Asian (25,747), 7.5% Hispanic (8,842), 5.5% Black or African American (6,484), 0.6% American Indian (674), and 0.2% reported to be Native Hawaiian or Pacific Islander (229). There were 16.5% non-U.S. citizen residents (19, 433) in the year 2019-20. Although the overall number of residents was higher in 2019 as compared to that of 2018, the percentage of International Medical Graduates (IMGs) decreased since 2015, from 25.9% to 23.1% in the year 2020. More than half of the physicians (55.5%) who completed residency during 2010 to 2019 were practicing in the same state where they completed their residency training with the highest retention rate in California (77.6%). When we consider the distribution of residents by gender and specialty, women accounted for a

larger proportion of residents in Obstetrics and Gynecology (83.8%), Pediatrics (72.4%), and Family Medicine (53.7%). Higher percentage of male residents reported within Diagnostic radiology (73%), Anesthesiology (66.9%) and Emergency Medicine (64.1%) (American Association of Medical Colleges, 2020; Boyle, 2021)

Clinical Learning Environment Review (CLER)

ACGME's Next Accreditation System (NAS) was implemented in July 2013 for Internal Medicine (IM) and in July 2014 for all other specialties. This new system was designed to prepare physicians to practice in the 21st century. Recognizing the public's need for a physician workforce capable of tackling the challenges of a rapidly evolving health care environment, ACGME implemented the Clinical Learning Environment Review (CLER) program as part of its Next Accreditation System in 2012. The CLER Program is designed to provide periodic feedback to US teaching hospitals, medical centers, health systems, and other clinical settings affiliated with ACGME-accredited institutions. The feedback through the CLER program addresses the following six Focus Areas: Patient Safety; Health Care Quality; Care Transitions; Supervision; Well-Being; and Professionalism. The feedback is also designed to improve how clinical sites engage resident and fellow physicians in learning to provide safe, high quality patient care.

During the CLER Program site visits, CLER Field Representatives meet with the organization's executive leadership, the organization's leaders in patient safety, health care quality, and well-being, leaders of GME, program directors, faculty members and residents and fellows. To gather insights from other members of the clinical care team regarding how the organization functions as a learning environment, the CLER site visit teams conduct walking rounds on various patient floors, units, and service areas. At the conclusion of each visit, the

CLER Field Representatives share their observations of resident and fellow engagement in the 6 key focus areas with the organization's executive leadership. It is through this feedback that the ACGME seeks to improve both physician education and the quality of patient care within these organizations. Following two requirements that: 1) Each Sponsoring Institution is required to periodically undergo a CLER site visit every 24 (±6) months; and 2) the chief executive officer and the leader of GME (specifically, the designated institutional official (DIO)) of the clinical site must attend the opening and closing sessions of the CLER site visit to connect the CLER Program with the rest of the accreditation process. The CLER program is based on the model of continuous quality improvement to evaluate, encourage and promote improvements in the Clinical Learning Environment. At the end of the visit, the CLER program provides 3 types of formative feedback to the sites: Oral and written reports summarizing the observations of CLER Field Representatives, and national aggregated and de-identified data showing progress on a continuum to achieving optimal residents and fellows' engagement in 6 focus areas (Accreditation Council for Graduate Medical Education, 2020; CLER Evaluation Committee, 2019).

CLER Pathways to Excellence

'CLER Pathways to Excellence' is the document that serves as a tool to promote discussions and actions to optimize the clinical learning environments (CLEs). This document describes the expectations that the CLEs try to meet or exceed in order to provide best care to their patients and to produce the highest quality physician workforce. The CLER Pathways to Excellence document provides a series of pathways for each of the six CLER focus areas. Each pathway has a series of key properties that can be used to assess resident, fellow, and faculty member engagement within the learning environment. This document, with each evolving

version, is prepared to state the current state of GME and the health care system by the members of the ACGME's CLER Evaluation Committee along with inputs from CLER Field Representatives, GME Leadership, sponsoring institutions' executive leadership, community, and data from CLER visits (CLER Evaluation Committee, 2019).

The CLER Pathways to Excellence is aimed at providing a framework for the clinical sites in their efforts to prepare the clinical teams to deliver safe, high-quality patient care. It is also aimed to accelerate national conversations about the importance of continually assessing and improving the clinical learning environments for the U.S. Physician workforce and the role of GME in promoting safe, high-quality patient care-among health care leadership, educators, policy makers, and patients (CLER Evaluation Committee, 2019). In version 2.0 of the CLER Pathways to Excellence, there are six focus areas with 34 pathways and 139 properties. For the achievement of pathways and their properties, a close partnership between GME leadership and the executive leadership at the clinical site is required. Along with the feedback received through the CLER program, CLER Pathways for Excellence serve as the tool for assessment of current situation and envisioning and future planning for optimal clinical learning environments (CLEs) but CLER Pathways for excellence are not utilized for determining the accreditation status for the sponsoring institutions and their residency programs (CLER Evaluation Committee, 2019).

The Accreditation Council on Graduate Medical Education (ACGME) puts a strong emphasis on the role of graduate medical education in eliminating health disparities and achieving health equity. The ACGME has delivered education imperative for residency and fellowship programs to address health care disparities. The document 'CLER Pathways to Excellence', for focus areas 'Health Care Quality,' it is expected that the optimal clinical

learning environment will provide interprofessional and experiential training aligned with the quality goals on the clinical site, in all phases of quality improvement. It is imperative that residents and fellows are engaged in planning, implementation and re-assessment, the entire cycle of quality improvement. There are 7 pathways in this focus area (HQ1 TO HQ 7). The pathway HQ1 is 'Education on quality improvement' and has 5 properties, Pathway HQ2 is 'Resident and fellow engagement in quality improvement activities' and has 4 properties. Pathway HQ3 is 'Data on quality metrics' and has 4 properties and Pathway HQ4 is 'Resident and fellow engagement in the clinical site's quality improvement planning process' and has 3 properties. CLER Pathways 5, 6, 7 address the areas of health care quality with the focus on disparities and are described below (CLER Evaluation Committee, 2019).

HQ Pathway 5: Resident, Fellow, and Faculty Member Education on Eliminating Health Care Disparities

The Health Care Quality Pathway 5 (HQ Pathway 5) mandates the education of residents, fellows, and faculty members on eliminating health care disparities. It has the following four properties: 1) The clinical learning environment is expected to provide the clinical care team, including residents, fellows, and faculty members with education on the differences between health disparities and health care disparities; 2) The CLE is expected to ensure that the clinical site's priorities for addressing health care disparities are known to the residents, fellows and faculty; 3) CLE is expected to provide education on identifying and eliminating health care disparities among specific patient populations receiving care at the clinical site and, 4) CLE is expected to maintain a process informing the residents, fellows, and faculty members on the clinical site's process for identifying and eliminating health care disparities (CLER Evaluation Committee, 2019)

HQ Pathway 6: Resident, Fellow, and Faculty Member Engagement in The Clinical Site Initiatives to Eliminate Health Care Disparities

The Health Care Quality Pathway 6 mandates resident, fellow, and faculty member engagement in clinical site initiatives to eliminate health care disparities and has following 5 properties: The CLE is expected to 1) Engage residents, fellows, and faculty members in defining strategies and priorities to eliminate health care disparities among its patient population; 2) Identify and share information on the social determinants of health for the patient population served by the residents, fellows and faculty members, 3) Provide quality metrics data on health care disparities grouped by its patient population to residents, fellows and faculty members, 4) Provide opportunities to engage in interprofessional quality improvement projects focused on eliminating health care disparities among patient population served and, 5) Monitor the outcomes of quality improvement initiatives aimed at eliminating health care disparities among its patient population (CLER Evaluation Committee, 2019).

HQ Pathway 7: Resident, Fellow, and Faculty Members Deliver Care That Demonstrates Cultural Humility

Lastly, the Health Care Quality Pathway 7 (HQ Pathway 7) mandates the residents, fellows, and faculty members to deliver care that demonstrates cultural humility and has following 2 properties: The CLE is expected to 1) Provide continual training in cultural humility relevant to the patient population served by the clinical site and 2) Ensure that the clinical care team, including residents, fellows, and faculty members, deliver care that incorporates the views of culturally diverse patient population (CLER Evaluation Committee, 2019).

Although the ACGME has provided clear mandates, it is unclear to what extent residencies and fellowships have implemented their own curricula addressing health and health care disparities. The report describing national findings from last round of CLER visits stated that although house officers were able to identify their populations that were most at risk for health disparities, few programs had a formally designed structure or systematic approach to address variability in the care provided or the outcomes. Although a few CLEs were involved in comprehensive efforts to identify and eliminate disparities systematically, residents, fellows, faculty, and program directors were not involved in these efforts in a substantive way. It was uncommon for the residents and fellows to participate in system-based solutions to eliminate healthcare disparities. Additionally, there was a lack of formal cultural competency training addressing the populations served by the programs, along with the lack of standardized curricula to address disparities. The residents reported poorly perceived self-efficacy to discuss disease-specific disparities with patients. The most common barriers to the implementation of a health disparities curriculum identified in the national survey of Internal Medicine Program Directors were lack of faculty expertise especially in assessing resident's cultural competency skills, lack of institutional resources, and time (Cardinal et al., 2016; Co et al., 2018).

Need for Physician Education on Health and Health Care Disparities

Demographic Shifts Within the USA

The demographic shifts within the USA and its impact on various population groups needs to be considered as it provides context to the national goals established by Healthy People 2030. The year 2030 will mark a demographic turning point for the United States because all baby boomers will be older than 65 years then, expanding the size of the older population such that 1 in every 5 individuals will be of retirement age. By the year 2034, the older population will

outnumber the child population for the first time in U.S. history. Also, by 2030, immigration will become the primary driver of population growth as it will overtake the natural increase in population (excess of birth over death). Beyond the year 2030, the U.S. population will grow slowly, will age markedly, and will become more racially and ethnically diverse. The U.S. population will grow by 79 million, from 326 million in the year 2017 to reaching 404 million by the year 2060. This contrasts with other developed countries whose populations will either not grow as much or will undergo attrition. By the year 2060, the population above 65 years of age will double in size, from 49 million in 2016 to 95 million. The number of people over 85 years of age is projected to nearly double to 11.8 million by the year 2030 and nearly triple to 20 million by the year 2060 (Vespa et al., 2018).

Demographic Shift by Race and Ethnicity

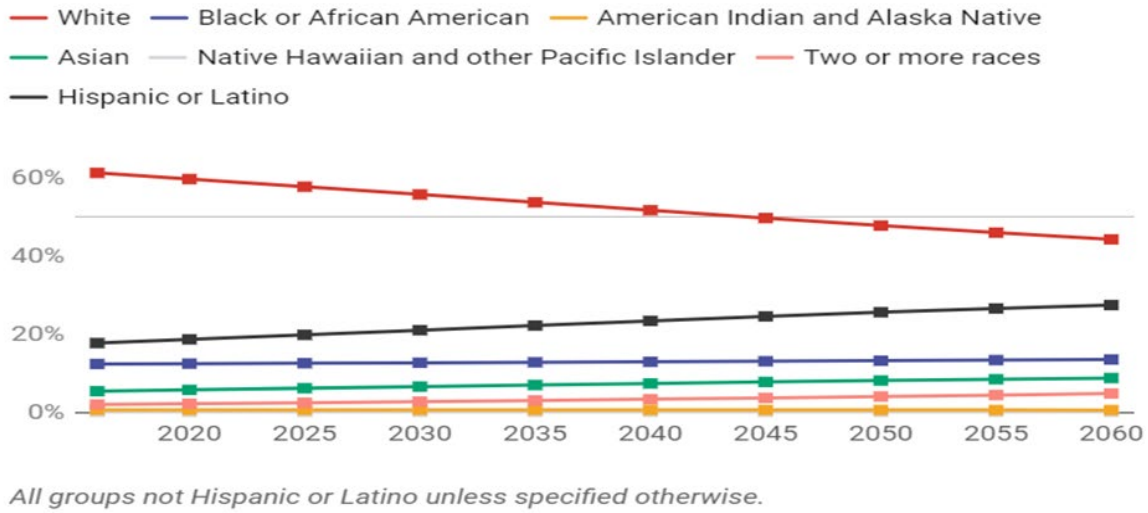
Currently, the non-Hispanic Whites are the majority population group within the U.S. constituting about 59.7% of the U.S. population. They are followed by Hispanics (18.7%), African Americans/Blacks (12.7%), Asians (5.6%), Native Americans/Alaska Native (1.5%) and Native Hawaiian/Pacific Islanders (0.4%) (Office of Minority Health, 2019). The non-Hispanic White population is projected to shrink from 199 million in 2020 to 179 million in 2060. The White population, regardless of the Hispanic origin is projected to grow from 253 million to 275 million during the same period. The population of people who belong to two or more races is projected to be the fastest growing population group, followed by Asians and Hispanics. The reasons for their growth are different, with Hispanics and people with two or more races, it is due to natural increase while the growth of Asians will be largely due to high net international immigration. The nation's foreign-born population is projected to increase from 44 million in 2016 to 69 million in 2060. The native population will add about 1.3 million people per year as

compared to 579, 000 per year for the foreign-born population living in the United States (Vespa et al., 2018).

By the year 2020, fewer than half of the children in the United States would be non-Hispanic Whites. The proportion of children belonging to two or more races will more than double (National Institutes of Health, 2014). To summarize the projections till the year 2030, the population of the U.S. will be about 350 million, gaining about 18.6 million people. The population will keep getting older. Currently, there are 74.1 million people under the age of 18 years and about 56.4 million people aged 65 and above. Within the next 10 years, the number of people below 18 years of age would be 76.3 million, adding just a little but the number of people above 65 years would increase to reach 74.1 million. The racial proportions will change within the next 10 years: The White population will decrease to 55.8%, and Hispanics will grow to 21.1% of the total population. The percentage of African Americans/Blacks and Asians will also grow markedly. Between 2020 to 2030, the White population group will get smaller, and the minority population groups will keep growing. The Whites are projected to drop below 50% of the U.S. population by the year 2045. The following diagram displays the racial make-up of the U.S. population by the year 2060 (Poston, 2020).

Figure 4

Demographic Shift within United States



Source: (Poston, 2020)

When considered by language fluency, among the largest minority population group, Hispanics, 72% speak language other than English at home. Overall, 36.2% of Asians within US are not fluent in English and 74.4% speak language other than English at home. About 26.9% of Native Americans/Alaska Natives and 27.6% of Native Hawaiian/Pacific Islanders speak language other than English (Office of Minority Health, 2019).

Need for Training in Cultural Competence for Healthcare Professionals

The United States of America has traditionally been known as the nation of immigrants, it is a diverse society with the amalgamation of many cultures that are shared by various population groups that reside within the United States. Diversity can be perceived as the hallmark of the U.S. culture. Diversity can be defined as "the dynamic philosophy of inclusion based on respect for cultures, beliefs, values, and individual differences of all kinds. It respects

and affirms the value in differences, in ethnicity and race, gender, age, sexual orientation, socioeconomic status, linguistics, religion, politics, and special needs" (Pérez & Luquis, 2014). The distinctions of majority and minority populations exist within the realm of diversity. These populations differ in the population proportions and in the power, control, and wealth they hold. The ways in which the majority/dominant population group treats the minority population can result in mistreatment, marginalization, and lack of opportunities leading to deprivation and exclusion. Diversity makes it imperative to understand these population dynamics including the understanding of the cultures (values and beliefs, thoughts, languages, communication styles, ways of interacting, views on roles and relationships, practices, and customs) of these majority and minority population groups (Pérez & Luquis, 2014).

The health disparities that exist between these majority and minority population groups are a function of the social determinants of the health, especially belonging to the following two areas: 1) neighborhoods and social economy, 2) health, human rights, and social equality (Othering and Belonging Institute, n.d.). These differences in health and health outcomes are not natural but a result of social, economic, and built environments. The dominant or majority populations, due to their access to more power and resources, live longer and healthier lives, achieve better health outcomes. On the other hand, minority populations (African Americans, Native Americans, Pacific Islanders, and other people of color), due to lower access to opportunities and resources and racism, fare worse than the majority population (Non-Hispanic Whites). To reduce these inequities/disparities in health, a change in social and economic policies is warranted (Adelman et al., 2008). The healthcare disparities also are a function of the social determinants of health as well as additional factors such as lack of cultural competence, implicit bias, differential perceptions, attitudes, communication, and treatment of healthcare

providers towards racial and ethnic minorities. Language and health literacy issues also add to the problem. When working with diverse population groups, it is also important to address whether the individual is a migrant, first generation immigrant or refugee, the length of time the individual has lived in the country and the reason for immigration as these factors affect the health status of the individuals. Undocumented immigrants face challenges that are different from documented immigrants that include constant stress, fear of deportation, separation from family, traditionality, and language difficulties. Their status also makes them vulnerable to exploitation. It is necessary to understand the health, health care and health promotion needs of various population groups to provide optimal services. For that, it is also important to understand and address the health-seeking behaviors, treatment-seeking behaviors, attitudes, cultural nuances, beliefs, and values of these diverse population groups (Pérez & Luquis, 2014)).

Culture and Health

Culture and health are intrinsically related. Health is defined by cultures as a groups' view of the physical, mental, emotional, and social components required for a person to be considered healthy. Health is culturally defined, and different cultural groups have different health behaviors, different views about health and illnesses and different health treatment options. The values, beliefs, behaviors, customs, and practices within cultures influence health and health care. In their book Drs. Perez and Luquis describe a framework to examine generally accepted values and health beliefs among specific population groups. Understanding these commonly held values and beliefs can be considered as the starting point for cultural competence. The key aspect of cultural competency is understanding the subtle differences and nuances between cultures. The authors also caution that this framework should be used only as a guideline to avoid stereotyping. The framework is displayed in the table below:

Table 2. 4

A Framework for Understanding Culture

	European American	**African American**	**Native American**	**Hispanic/ Latino**	**Asian**	**Pacific Islander**	**Middle Eastern**
Health Perspective	Biomedical	Harmony Illness stems from sins	Harmony with nature, illness stems from disharmony	Health is gift from God	Harmony Balance	Harmony Traditional medicine	Based on good and evil
Psycho-behavioral activity	Action oriented	Action oriented	Being	Being	Action oriented	Being	Becoming
Axiology	Competition Direct communication Help orientation	Cooperation Direct Communication Help orientation	Cooperation Indirect Communication Save face	Cooperation Indirect Communication Help orientation	Cooperation Indirect Communication Save face	Cooperation Indirect Communication Help orientation	Cooperation Direct Communication Save Face
Ethos	Individuality Self – motivated Goal oriented, Nuclear family	Interdependent Respect elders Strong kinship bonds Equalitarian Family	Interdependent Respect elders Noninterference Extended Family	Interdependent Respect elders Authority based Extended Family Patriarchal	Interdependent Respect-Goal oriented, Authority based Extended Family Patriarchal	Interdependent Respect elders Extended family Patriarchal	Interdependent Respect elders Authority based Patriarchal
Logic	Linear	Linear	Circular	Circular	Circular	Circular	Linear
Epistemology	Cognitive and affective, Easy to change	Cognitive, Kinesthetic	Affective, Spatial	Cognitive, Irrational	Cognitive, Traditional	Affective	Cognitive, Traditional
Ontology	Religious	Religious	Spiritual	Religious Fatalism	Spiritual	Spiritual	Religious

Concept of time	Linear, Future Focus, Punctuality	Present	Cyclical, Present	Past and Present	Present	Past and Present	Past and Present
Concept of self	Individual Nuclear family	Collectivist Extended family	Collectivist Extended family	Collectivist Extended family	Collectivist Extended family	Collectivist Extended family	Collectivist Extended family
Nature and environment	Separate from nature, attempt to control	Connected with nature	Connected to and in harmony with nature	Connected to nature	Harmony with nature, Yin/Yang	Connected to Nature	Connected to nature
Human Nature	Good and bad	Good and bad	Good	Good	Good	Good	Good and bad
Proximity	Close	Close	Close	Close	Close	Close	Close
Silence versus talk	Talk	Active talk, High volume	Silence	Silence	Silence	Talk	Silence

Cultural Competence, Principles, and Practices

Cultural competence can be defined as "the congruent behaviors, attitudes and policies that come together in a system or among professionals, enabling effective work to be done in cross-cultural situations" (Pérez & Luquis, 2014). Cultural competence is based on the core principles of culture which state that culture is the predominant force in people's lives, that dominant cultures serve people in different proportions and people have personal as well as group identities. The other principles of cultural competence state that there is vast and significant diversity within cultures and each cultural group has unique needs that can't be satisfied by the dominant culture (Pérez & Luquis, 2014).

Culturally competent health providers need to be aware of their own cultural identities, values, and assumptions. Here, competence implies possessing the capacity to function effectively as an individual within the context of society and organization as well as within the

context of their clients' beliefs, behaviors, and needs. This also implies building relationships with culturally dissimilar individuals. They also need to evaluate how their cultural identity and values influence their practice and relationship with providers and educators that belong to other cultural/ethnic groups. Perez and Luquis (2014) state that cultural competence is a developmental process and cultural competence can be taught and learned. Commitment to individual growth is the preliminary requirement of becoming culturally competent that essentially means challenging one's social conditioning and cultural incompetence. Cultural competence also requires an understanding of the social determinants of health, especially the role of socioeconomic status, social inequality, and impact of culture on health and health care disparities. This non-linear, developmental process follows six levels of cultural competence continuum that include cultural destructiveness, cultural incapacity, cultural blindness, cultural pre-competence, cultural competence and cultural proficiency. Linguistic competence is defined as "the capacity of an organization and its personnel to communicate effectively and convey information in a manner that is easily understood by diverse audiences including persons of limited English proficiency, those who have low skills or are not literate, and individuals with disabilities." Cultural and linguistic competence are the requirements to provide optimal care to the increasingly diverse populations (Pérez & Luquis, 2014).

Cultural and linguistic competence can also be seen as the tools to reduce/eliminate the disparities in health care and to improve healthcare outcomes. In a systematic review to examine existing system-, clinic-, provider-, and individual-level interventions to improve culturally appropriate health care for racial/ethnic minority populations, people with disabilities; and lesbian, gay, bisexual, and transgender (LGBT) populations, two investigators screened over 37,000 nonduplicated English-language citations. Fifty-six unique studies were identified that

included 20 randomized controlled trials (RCTs), 5 observational studies for individuals with disabilities; 5 RCTs (6 manuscripts) and 6 observational studies for LGBT populations; and 14 RCTs (15 manuscripts), 4 observational studies, and 2 systematic reviews for members of racial and ethnic minorities (Butler et al., 2016). The review identified following 4 categories of interventions: (1) provider trainings and education; (2) interventions providing alteration of an established protocol, or the delivery of an established protocol, to meet the needs of a target population; (3) interventions prompting patients to interact with the formal health care system or health care providers; and (4) interventions aimed at providing culturally competent care at the point of service. The investigators identified many gaps. They concluded that none of the included studies measured the effect of cultural competence interventions on health care disparities. Although most of the training interventions measured changes in professional attitudes toward the population of interest, they did not measure the effect of changing provider beliefs on the care delivered to patients. The interventions aimed at altering existing protocols, provider behavior or patient empowerment to enhance interaction with the health care system were more likely to measure patient-centered outcomes. These studies also suffered bias risk. The investigators could not conclude about the efficacy of these interventions due to lack of consensus on measurement and heterogeneity of study populations. The authors also stated that the term “cultural competence” is not well defined for the LGBT and disability populations and is often conflated with patient-centered or individualized care. There are many gaps in the literature; many large subpopulations are not represented (Butler et al., 2016)).

There have been limited national efforts to incorporate cultural competency in healthcare. In a national study of organizational efforts to reduce physician racial and ethnic disparities that included over 20 possible actions to reduce disparities, 53% of the surveyed

organizations had only 0–1 activity to reduce disparities. Some examples of these disparity-reducing activities included provision of online resources to educate physicians on cultural competence, provision of educational materials in a different language, and recognition at national meetings for efforts to reduce racial disparities. Among the surveyed organizations, the membership size of the national physician organization and the presence of a health disparities committee were found to be positively associated with at least 1 disparity-reducing activity. The authors also stated that the primary care organizations were more likely to participate in disparity-reducing activities and likely to serve as role models for other physician organizations to take initiative (Peek et al., 2012). Nair and Adetayo (2019) asserted that the efforts to attract, recruit and retain highly qualified and skilled minorities and women should begin early. To improve cultural competence, measures should be taken at the trainee level to educate the residents and students about culturally appropriate education at national conferences and at their own institutions, before they transition to attending roles (Nair & Adetayo, 2019).

The ACGME emphasizes on cultural competency/diversity and has incorporated it in the professionalism competency area. Alliance of Continuing Medical Education conducted lectures on cultural competency during its annual national conference. The Department of Health and Human Services, Office of Minority Health have developed “Think Cultural Health”, a resource that enables health professionals to gain cultural competency through case-based learning and by offering continuing education credits. Efforts at state and local level are also required, 5 states currently have legislatures requiring or recommending training in cultural competency. Measures like these are required to bridge the gap in cultural competency. The lack of diversity in healthcare leadership is also dramatic with 98% of senior management in health care organizations being White. Improving the representation of women and ethnic minorities in

health care can be potentially beneficial in improving access to minority populations. Some of the pressing challenges include lack of exposure, teaching curricula and education on diversity. This may in turn be due to the perception of cultural competency as low priority in an overloaded academic curriculum. There is also lack of literature that can link cultural competence education with patient, professional and organizational outcomes.

Although scarce, efforts have been made to gain cultural competency to provide culturally appropriate care. Following 5 interventions were identified through a review of culturally competent healthcare industry systems to improve cultural competence: (1) gear programs to recruit and retain diverse staff members, (2) cultural competency training for healthcare providers, (3) provision of interpreter services to ensure effective communication, (4) provision of culturally appropriate health education materials to inform staff of different cultural backgrounds, and (5) provision of culturally specific healthcare settings. The authors stated that a market-incentive might be needed to implement culturally competent programs that improve patient experiences and outcomes. Additionally, improving public reporting on patient care and hospital quality could be used as drivers for the competition and to incline the healthcare organizations towards gaining cultural competence. The authors asserted that through intervention to increase awareness, providing training, education, resources and by incorporating these interventions, culture competence could be improved (Nair & Adetayo, 2019).

Lekas et al. (2020), argued that it was the need of the time to reexamine the meaning and connotation of the term cultural competence and to shift to cultural humility. The authors stated that although medical schools, health-related professional organizations and governmental organizations required training in cultural competence, the format, content, and quality varied widely. The authors pointed out that these trainings were mainly aimed at improving the

knowledge of the providers. The authors contended that although the intentions of such training were commendable but the assumptions behind cultural competence training and the use of the term cultural competence were problematic. These trainings maintained social stereotypes and power imbalance between providers and patients. The authors further stated that culture was not stagnant, but a changing system of beliefs and values shaped by our interactions with one another, institutions, media, technology, and by the social determinants of health. The authors stated that cultural competence held a static and totalizing view of culture giving rise to stigmatizing social stereotypes. The authors further stated that most cultural competence trainings assumed most US providers to be White, non-Hispanic, male, heteronormative, and English speaking. These trainings sought to expose these providers to the cultures of *othe*r social groups, to help them communicate with non-White patients who were assumed to embrace common beliefs and experiences solely based on their race and/or ethnicity. The authors asserted that this approach contributed to the reproduction of racial and ethnic stereotypes and racism. They further added that the application of the training-generated stereotypes by providers increased the risk of othering patients, a process of amplifying the "us" versus "them" orientation contributing to implicit bias leading to patient discrimination. The authors also pointed that the cultural competence training lacked the intersectionality approach; this approach suggested that the patients' beliefs and values were shaped by the intersection of their different characteristics, such as race, class, gender, and sexual orientation. This lack of intersectionality could result in discrediting the patient's perspective. The authors highlighted the following limitations of the cultural competence approach spanning the last two decades: 1) extensive variability in all features of trainings and programs in cultural competence, including in scope, length, content, and mode of delivery. This variability contributed to a lack of clarity on what constituted cultural

competence and how it developed. There was also a lack of guidelines on design and delivery of training and programs; 2) cultural competency trainings primarily focused on increasing provider knowledge, or on improving attitudes and skills. These trainings had a little or no effect on patient satisfaction and/or patient health outcomes and contributed a little to reduce disparities; 3) There was extensive heterogeneity in the type of knowledge, attitudes and skills that were gained through these trainings. This led to ambiguity in the effectiveness of the cultural competency programs/trainings. The authors recommended using the 'cultural humility' approach instead of competence because cultural humility was oriented towards patient care that was based on self-reflexivity and assessment, appreciation of patients' expertise on the social and cultural context of their lives, openness to establishing power-balanced relationships with patients, and a lifelong dedication to learning. The authors advocated for cultural humility, a new, process-oriented approach that referred to an interpersonal approach that enhanced providers' capabilities to deliver person-centered care (Lekas et al., 2020))

Role of Graduate Medical Education and Other Medical Organizations

To reduce disparities, Maldonado et al. (2014) asserted that Graduate medical education has a clear charge in ensuring training of a new generation of physicians who are firmly grounded in the principles of practicing culturally competent care and committed to the reduction of health care disparities. Their recommendations for addressing disparities included collection and reporting data on patient race and ethnicity, use of language interpretation services, education of health care disparities to create awareness, requiring cultural competency training for all health care professionals, and increasing diversity among those delivering health care as well as among physician workforce and academic medicine faculty. The ACGME has greatly emphasized on the graduate medical education's role in eliminating health care

disparities and has delivered explicit educational imperative for the residency and fellowship programs to address disparities (Maldonado et al., 2014).

The CLER Pathways of Excellence and the Health Care Quality Pathways have been discussed in detail in this literature review. The ACGME directs that the trainees and faculty should receive education on identifying and reducing health care disparities and cultural competency training that is relevant to the institution's patient population. The trainees should be engaged in quality improvement activities to address the disparities faced by the vulnerable populations served by the clinical site. The ACGME has established cultural competency milestones that should be achieved at the conclusion of residents' and fellows' training. The ACGME asks that medical educators should objectively evaluate and report on their trainees' ability to practice patient-centered, culturally competent care. Further, the residency and fellowship programs should be engaged in the delivery of meaningful curricula on cultural competency and health care disparities and ensuring assessment of residents in providing culturally competent care.

Although there are clear mandates, there are various challenges to the implementation which include lack of qualified faculty to teach about disparities, and lack of standardized curricula. It is uncertain to what degree residency programs are incorporating curricula on health care disparities and cultural competency training. Time and resources for faculty development are limited. There is a lack of standardized tools to objectively evaluate trainees on their ability to practice culturally competent care and measure patient outcomes. There is also need for data on whether these curricula and objective assessments translate into improved patient outcomes. There is also need for collaboration between training programs and institutional leadership to ensure data collection stratified by patient race, cultural identification, and language on patient

satisfaction, outcomes, and quality measures. Although ACGME has devised clear mandates, there is need for understanding current state of graduate medical education as it relates to these curricula and trainee assessment in health disparities and cultural competence (Maldonado et al., 2014).

Position of the American Medical Association (AMA)

The American Medical Association (AMA) considers elimination of racial and ethnic disparities a top priority and encourages physicians to examine their own practices to ensure equality in medical care. It is the mission of AMA "to achieve health equity by mitigating disparity factors in the patient population." Through its policies and advocacy (federal/state advocacy, advocacy for public health, access to care, payment reform, administrative burdens, judicial advocacy) to reduce health care disparities, the AMA works to increase the number of minority physicians to reflect the diversity. American Medical Association (AMA) has partnered with AMA foundation to increase physician awareness on health literacy and manage low health literacy. The AMA has enacted policies that aim to a) Increase awareness of racial and ethnic disparities in health care among the public, b) Strengthen physician-patient relationships in publicly funded health plans, and c) Apply the same managed care protections to publicly funded HMO participants that apply to private HMO participants ((American Medical Association, n.d.)

Position of the American College of Physicians (ACP)

The American College of Physicians advocate that more needs to be done to understand and address discrimination and disparities in health and health care that adversely affect the racial, ethnic, religious, and cultural communities and people. On January 12, 2021, the ACP released a comprehensive, interconnected and evidence-based policy framework to understand, address and end disparities and discrimination in health and health care and proposed

specific policy recommendations to address issues in education and healthcare workforce, specific populations and in criminal justice practices through a set of three companion papers (Serchen et al., 2021). The ACP believes that a cross-cutting approach is required to identify various aspects of society that contribute to poor health and offer solutions to achieve its goal of good health care for all, poor health care for none. The policy framework reiterates that causes of disparities are multifaceted and discrimination and biases (implicit and explicit) are major contributors to low health care access and coverage, higher rates of mortality and morbidity, and poorer health outcomes and health care quality. The policy paper describes 17 recommendations. Out of those, the recommendations related to physicians, healthcare workforce and medical education are listed below:

- ACP recommends that policymakers comprehensively address the interconnected contributors to health and health care disparities, including the role of racism, discrimination, lack of coverage and access to care, poverty, and other social drivers of health,
- ACP believes that public policy must support efforts to acknowledge, address, and manage preconceived perceptions and implicit biases by physicians and other clinicians,
- ACP believes that health care facilities and medical schools and their clinicians and students should be incentivized to use patient-centered and culturally appropriate approaches to create a trusted health care system free of unjust and discriminatory practices,
- ACP believes that a diverse, equitable, and inclusive physician workforce is crucial to promote equity and understanding among clinicians and patients and to facilitate quality care, and it supports actions to achieve such diversity, equity, and inclusion,

- ACP believes that policymakers must strengthen U.S. education at all levels to improve health, health literacy, and diversity in medical education and in the physician workforce and must prioritize policies to address the disproportionate adverse effect of discrimination and inequitable financing in education on specific communities based on their personal characteristics (Serchen et al., 2021).

In the companion position paper on Education and Physician Workforce, the American College of Physicians expanded on these four recommendations for addressing disparities and discrimination based on race, ethnicity, religion, and cultural characteristics and identities in the context of education and the physician workforce (Serchen, Doherty, Hewett-Abbott, Atiq, & Hilden, 2021). The authors stated that the disparities exist at all levels of education starting from primary and secondary education leading up to medical schools where only 6.2% of students are Black, 5.3% Hispanic or Latino, 0.2% American Indian or Alaska Native, and 0.1% Native Hawaiian or Pacific Islander. These disparities further translate into disparities in the physician workforce: 5.8% of physicians are Hispanic, 5% Black, 0.3% American Indian or Alaska Native, and 0.1% Native Hawaiian or Pacific Islander. The authors state that physicians from underrepresented backgrounds face numerous barriers including discrimination, a lack of career advancement and mentors, and the burden of extra responsibilities for diversity activities and services. The authors assert the importance of recruitment and retention of minority physicians given the improvements in outcomes and rates of preventive services when minority patients receive care from racially concordant physicians. Physicians from underrepresented backgrounds are also more likely to see more Medicaid, uninsured and patients from underrepresented backgrounds. Because of these reasons, the ACP strongly champions “Education and the

physician workforce" as the key components of its comprehensive framework (Serchen et al., 2021).

Health Disparities Curricula/Other Relevant Curricula in Graduate Medical Education

In the sections above, it is discussed that there is a lack of standardized curricula on health disparities in medical education. It is also not clear to what degree the residency programs are incorporating curricula on health disparities and cultural competency. A national survey was conducted by the Alliance for Academic Internal Medicine (AAIM) Diversity and Inclusion Committee to assess the current state of education in this area in which 391 Internal Medicine Program Directors participated. About 31% of the program directors indicated that in a given week, their residents cared for a patient population where more than 10% of patients had limited English proficiency. Only 21% agreed that their residents had adequate resources to help patients with low English proficiency. The program directors indicated that the residents in their program had received training in cultural competency (75.6%), recognizing health care disparities (71.4%), caring for patients with low English proficiency (60%), addressing health care disparities (50%) and addressing health literacy of patients (41.1%). When the program directors were specifically asked if formal education was received by their residents on caring for patients with low English proficiency, 62% indicated that their residents received formal education on interpreter services, and 33% indicated their residents received formal education on health care disparities. Only 30% indicated having observations of residents conducting interview with medical interpreter services, and only 26% indicated residents having education on teach back techniques. 19.3% of program directors indicated that their residents did not have any formal education in these specific areas. Only 34% of program directors agreed that they had sufficient faculty members competent at training residents on health care disparities and cultural

competence. Only 24% agreed that their faculty members received faculty development in these areas and only 26% of the program directors agreed that their faculty could evaluate the residents on their ability to practice culturally competent care. Only 17.8% of program directors indicated satisfaction with the evaluation tools their program had to assess residents on their ability to practice culturally competent care. When asked about the barriers to implementing a cultural competency/healthcare disparities curriculum, majority of program directors indicated lack of faculty expertise (67.9%), lack of time (67.3%), lack of faculty competent in assessing residents' cultural competency skills (59%), lack of institutional resources (51.8%), and no access to healthcare disparities data at the institution (40.9%). About 19.4% of the program directors indicated that residents did not think these areas as important, and 1.8% program directors said that they themselves didn't think these as important areas (Cardinal et al., 2016).

Siegel et al. (2018) asserted that the competency in recognizing and mitigating social determinants of health should become a vital component of graduate medical education in all specialties as these are major drivers of health and differential health outcomes among populations. The authors also asserted that educators need to help trainees gain this competency as it would allow the trainees in finding meaning and mastery in medicine by equipping them with knowledge, skills, and attitude to effectively address the health needs of their patients and communities. The authors highlighted that the inclusion of material on social determinants of health, despite growing understanding and importance, was either sporadic or optional. The authors also stated that the most effective approaches for educating trainees abut social determinants of health were uncertain and that various health systems that host GME programs had not shown consistent commitments to address SDOH and lacked connections to relevant community-based resources. The authors expressed that in addition to curricular content,

experiential learning through modeling by faculty, and the institutional clinical learning environment were needed. The authors also stated the need for residency review committee to identify critical components of SDOH for integration into six core competencies.

In detailing the key principles for curricular implementation, these authors delineated the following: 1) Universalization of the curricula and integration into broader educational programming: This will emphasize that SDOH are pertinent to all areas of clinical practice and tackle the notions that SDOH are elective or are only part of learning for trainees in health equity, advocacy, or health disparities tracks/pathways. Although the needs of trainees vary by specialty, establishing a core set of knowledge and skills is needed by all GME trainees to effectively address SDOH, 2) Seamless integration of SDOH curricula into clinical education: This includes inclusion in conferences, morning reports, and other educational encounters across all clinical sites, 3) Opportunities for trainee introspection: The program should create opportunities for introspection where trainees can introspect about their own stories, culture and their influence on own understanding of SDOH. This can involve small-group discussions, reflective writing and/or community conversations on the topics of race/class etc. 4) Specific competencies in identification and mitigation of SDOH: These competencies need to be identified which include communication skills to elicit relevant SDOH information from patients, skills to successfully mobilize resources, skills to identify social, legal and financial services along with other clinical professionals to help the patients: a potential skill under systems-based practice competency. The authors identified further SDOH competencies that included the recognition of implicit and explicit biases, advocacy skills, development of a basic awareness of health care financing and payment structures, and communication skills to combat socioeconomic barriers. The authors stated the need for development of evaluation tools by

programs and regulatory organizations after defining and accepting the SDOH competencies. The authors provided examples of such evaluation tools that include assessment of trainee communication in objective structured clinical examination, self-efficacy metrics for the trainees, inclusion of questions on health and social policy in licensing exams, and inquiry into trainee opportunities for collaborative work with community organizations/interprofessional teams, 5) Lastly, robust faculty development to ensure skilled faculty preceptors especially in eliciting and addressing SDOH in regular clinical work as didactic teaching on SDOH may not be sufficient (Siegel et al., 2018).

The authors further highlighted that graduate medical training is heavily influenced by formal or stated curriculum of a training program as well as the hidden curriculum. The authors suggested that GME training programs needed to expand on the material covered during their orientations and work collaboratively to create core curricula on SDOH. The authors further added that programs should develop didactic training on central themes such as SDOH which are pertinent to all medical specialties. The authors also agreed that community-based, service-learning opportunities are fewer in graduate medical education. The authors described the need for experiential learning and illustrated opportunities in communication-simulation exercises, and advocacy training. The authors also highlighted the roles and responsibilities of all members of the health care team such as social workers, community health workers, navigators, care-coordinators, and nurses need to be defined in the context of addressing the social determinants of health. The authors also underlined the role and impact of the hidden curriculum on the trainee's perceptions of the SDOH. Absent resources, internalization of disparaging and discriminatory behaviors towards patients, lack of modeling by faculty, and institutional practices like steering patients with less remunerative insurance to resident clinics, creating

‘teaching’ vs. ‘private’ clinics may lead to harboring an attitude of neglect towards SDOH, perpetuating inequities (Siegel et al., 2018).

Dupras et. al (2020) stated that the Association of Program Directors in Internal Medicine (APDIM) survey committee developed and conducted an annual survey of the Internal Medicine Program directors to address important issues in graduate medical education. Some of the surveys have addressed issues related to health disparities including cultural competency training and quality improvement projects. Although a 2011 survey showed that residents had a favorable attitude towards topics on medically underserved populations and health disparities, a 2010 multi-institutional survey had assessed the internal medicine residents’ health disparities education; the results of which had shown that only 14% of the surveyed residents felt confident in their knowledge of underserved populations. In the 2012 APDIM survey, 16.6% of the internal medicine program directors had reported the presence of disparities curriculum. The cross-sectional survey study was conducted in the year 2015 with goals to describe the curricular content and/or educational experiences on health disparities, to determine residents’ perception of training in health disparities, and to determine the association between program curriculum and resident perception of training. The survey was mailed to 368 Internal Medicine Program Directors who were members of the APDIM. There were a total of 396 ACGME accredited Internal Medicine Programs so the members of APDIM represent 92.9% of the total internal medicine programs available in the U.S. The survey collected information on characteristics of the program and program directors, as well as items on health disparities training availability, training content domains, barriers to implementation, and whether the institution had a CLER visit. The program Directors’ survey was accompanied by a 1-time internal medicine residents survey that was included as a part of the Internal Medicine-In Training Examination (IM-ITE).

The IM-ITE is a standardized examination developed by a Committee of the American College of Physicians (ACP) that is administered every August through September and nearly 100% of the internal medicine residency programs accredited by the ACGME participate in it. The examination serves as a self-assessment of medical knowledge for internal medicine residents. At the end of the examination, residents are asked to complete a voluntary survey which is submitted with their online examination. The residents are asked for their consent to allow responses to be used in research. These survey questions are designed to gain an understanding of residents' training environment. The IM-ITE survey in 2015 included 3 questions on residents' perception of their training in health disparities. The results included the program-level data set containing 408 training programs. It included 396 ACGME internal medicine programs (97.1%). Among the 368 APDIM member programs, 227 program directors (61.7%) had responded to the survey. There were 22, 723 residents who completed the survey (response rate 87.2%). After merging, the combined data set included 18,883 residents from 366 APDIM member programs and 225 program director responses. For analyses requiring identifiably linked PD and resident survey responses, 11,583 resident responses were available from these 225 corresponding programs (Dupras et al., 2020). A total of 91 program directors (39.6%) reported having a health disparities curriculum and 132 programs lacked it. The mean time dedicated to the curriculum was 11.4 hours while the median was 6 hours. Among the programs that had a health disparities curriculum, 84 programs (90.3%) reported having education on racial/ethnic diversity as well as socioeconomic status. Fifty-four programs [58.1%] reported including information on limited English proficiency, 49 programs (52.7%) reported information on gender identity/sexual orientation program and 41 programs (44.1%) addressed religious beliefs. Most

reported educational methods were lectures (66 programs [71.0%]), group discussions (50 programs [53.8%]), and clinical experiences (37 programs [39.8%] (Dupras et al., 2020)

In this study, when the program directors were asked about the quality of their health disparities educations, it was reported as fair (35 program directors [38.9%]), good (39 program directors [42.4%]), or very good (15 program directors [16.7%]). Most of the programs did not measure the outcomes of the curriculum (52 programs [55.9%]). Assessment of the curriculum included direct observation of residents (33 programs [35.5%]) more commonly but clinical outcomes (9 programs [9.7%]), resident attitudes (8 programs [8.6%]), or knowledge (8 programs [8.6%]) were rarely used as assessments (Dupras et al., 2020).

For the 132 programs that did not have a curriculum, the program directors reported barriers to development that included time constraints within the formal curricular education (64 program directors [48.5%]), insufficient faculty skill (63 program directors [47.7%]), lack of institutional support (42 program directors [31.8%]) and lack of faculty interest (29 program directors [22.0%]). Only 40 program directors (30.5%) reported intention to develop and implement a curriculum within 1 year; 40 program directors (30.5%) had no plans for a curriculum, and 51 program directors (38.9%) were unsure (Dupras et al., 2020)).

As for the results of the residents' survey, overall, 13, 251 residents (70.2%) reported some training in caring for patients at risk for health disparities and the perception of receiving training increased with each additional postgraduate year. Among the 13,251 residents who had reported training, the quality of training was rated as very good by 5503 residents [41.5%]) or excellent (4791 residents [36.2%]): total of 10,294 residents). There authors found an association between a resident's perceived receipt of training and their estimated proportion of patients who would be considered at risk for health disparities. Although less than 40% of program directors

reported having a curriculum for training in health disparities, most residents reported training while providing care of patients who were at risk for health disparities (underserved, uninsured, unemployed, or homeless). The authors found no association between the program director–reported presence of a curriculum and the resident report of training or their rated quality of their training in the merged data set. According to the authors, this study is the first study that reported on the breadth of health disparities training within the internal medicine training programs in the US. The authors further stated that although 70% of the program directors had a CLER visit indicating awareness about requirement for health disparities training, only 40% reported having a curriculum. The authors further stated that competing curricular priorities, challenge of determining what needs to be included in a health disparities curriculum and limited time for community engagement in graduate medical education posed as challenges to implementing the curriculum. The didactic curriculum only (lectures, online modules) did not fully develop the understanding of the lived experiences of health inequities or cultural humility. There were major limitations to this study that included not asking the residents directly if they were exposed to a curriculum in health disparities. Rather the residents were asked if they received training to provide care to the patients at risk of disparities. It could not be distinguished if there was a recognition of a formal and informal curriculum by the residents. The authors also stated that although the program directors were asked explicitly about the presence of a curriculum, it was uncertain if they were aware of all training. Still, it was the first study that reported on existence of health disparities curriculum with specialty-wide effort to include all programs, program directors and residents. The major strength of this study was this large, representative, and comprehensive sample (Dupras et al., 2020).

It is important to discuss the development of a health disparities curriculum on the background of the various surveys and barriers discussed. Noriea et al., (2017) described the design, implementation of multifaceted disparities curriculum for medical residents. Within the Tinsley Harrison Internal Medicine Residency Program at the University of Alabama at Birmingham (UAB), the authors developed the Health Disparities Track (HDT). The curriculum development process began in April 2014 using Kern's six-step model for curriculum design and the curriculum was implemented in July 2014. The authors considered curricular, learner and patient needs assessment which was conducted prior to curriculum implementation. All postgraduate year residents (PGY 2 and 3) were invited to participate. The authors utilized a multidimensional approach to curricular design. For the implementation, two chief medical residents and one faculty member created the didactic sessions using publicly available resources. The didactics were delivered quarterly between 5pm to 7pm. The authors collaborated with two community organizations to offer residents clinical experience. For experiential learning, the authors assigned videos, structured community exploration and critical reflection. The residents were tasked with developing a 1-hour lecture for dissemination of health disparities information to their peers and community resource guide for clinical and social services available to low socioeconomic status patients. The authors evaluated feasibility of implementation and learner outcomes. In feasibility, they assessed practicality: total time and cost for curriculum implementation, and demand (resident engagement). For outcomes, they assessed the number of didactic sessions delivered. For learner outcomes, the authors assessed self-reported changes in preparedness, skills, and attitudes towards the care of vulnerable populations using a previously published survey. The survey was administered in pre- (July 2014) post- (May 2015) manner. To measure change in attitude, the authors evaluated resident

commitment to change, a validated self-assessment tool for learner behavior change. In describing the results of the evaluation, the authors stated that they implemented all curricular activities with no external funding. As meals were provided for the didactic sessions, it generated an internal funding requirement of $300. Time costs included 100 chief residents and 20 faculty hours for curricular development and 20 chief resident and 16 faculty hours for implementation. No other curricula were replaced for the implementation of this curriculum. Additionally, one faculty member provided no-cost supervision at the community organization. Sixteen residents out of 75 (21%) participated in the first year of the curriculum and attended an average of 2.1 (out of 4) didactic sessions. The authors stated that the resident engagement in curricular activities varied. It ranged from 38% (n=6) for community explorations to 69% (n=11) for critical reflections. 88% (n=14) viewed assigned videos, and 100% (n=16) participated in dissemination of disparities information to peers. As for program outcomes, the authors developed eight didactic sessions and delivered four as planned in the first year. Residents who participated in community clinic provided eighty-four clinic sessions which were 3 hour long. The authors also developed process and didactic toolkits to facilitate external use by other residency programs. Regarding learner outcomes, 63% of the residents (10) completed pre-and post-surveys which showed improvement in 15 out of 20 measured domains. The authors described that despite of the documented barriers to the development of the health disparities curricula that include lack of faculty expertise, time for curriculum development and tools for assessing resident competency, the authors were able to develop, implement and evaluate the Health Disparities track in less than 1 year without external funding. The authors acknowledged the role of supportive program leadership, chief resident and faculty champions, a community clinic with aligning priorities, and publicly available resources in their success. The authors

stated that although the curriculum was developed within the internal medicine residency with general resources, it could still be utilized by other residency programs. The limitations identified by authors included small sample size limiting the evaluation, the lack of control group and potential for social desirability bias and ceiling effects. The authors identified longitudinal evaluation of outcomes and qualitative assessment to determine the best methods of curricular improvement and expansion as their next steps (Noriea et al., 2017)

The purpose of the Hasnain et al. (2014) paper was to review and summarize the published literature on health disparities curricula in graduate medical education. In this systematic review, out of the 302 articles initially identified, 16 (5.3%) articles met the eligibility criteria for inclusion in the study. Of the 16 reported programs included in the review, six belonged to (37.5%) pediatrics, five from family medicine (31.25%) from, four internal medicine programs (25%), and one was from surgery (6.25%). The authors stated that there were great variations among the included programs in curricular elements, training aims, learner competencies, learning activities, and evaluation methods. The authors described in detail each of the following elements: a) Learner competencies: Nine programs had defined learner competencies (56%). These included communication (4), cultural competency (4), research (2), and clinical skills (1). None of the programs explicitly had linked their training elements to the core competencies mandated by the ACGME. b) Training format and content: There was great variability in this area. Eight programs (50%) had longitudinal training components spanning across the residency period, seven programs (44%) had block experiences only, and one program (6.25%) described a one-time internet-based module. Residents were required to develop and complete a research project in four programs (25%) and six programs (37.5%) had community-based clinical training. In instructional methods, the majority of the programs utilized didactic

sessions, demonstrations, and small-group discussions while one program had graduate level courses in epidemiology and health policy. c) Evaluation Methods and Outcomes: All 16 (100%) programs reported one or more method(s) of evaluation to assess program impacts. Learner evaluations included feedback about the program and self-assessment, patient/community evaluation methods included patient feedback, community staff feedback, teacher evaluation methods include case-based discussions, direct observations, written assignments, quizzes/survey, videotaped reflections, attendance/project completion. Other evaluation methods included 360-degree evaluation and PG career tracking (Hasnain et al., 2014)).

The authors stated that their review found only a few reports in the published literature aimed at content, process, and learner outcomes in curricula on the care for vulnerable and underserved populations and health disparities in graduate medical education. The authors stated major proportion of the published curricula were developed and implemented by the primary care specialty programs (Internal medicine, Pediatrics, Family Medicine). The authors also highlighted that physicians who received training in underserved settings were more likely in future to select primary care and to practice in underserved settings. Given the physician shortages, especially primary physicians, developing training content focused on health disparities concepts, principles and competencies is both relevant and timely as it would contribute to recruitment and retention of physicians to serve in disadvantaged areas. The authors also pointed out that despite the consensus on the need for training in health disparities and role in reducing/eliminating those, there was a lack of consensus on what such training should incorporate. The authors argued that the significant gap in training physicians to provide quality care for the underserved and vulnerable populations could be attributed to lack of clarity about key curricular elements focused on addressing health disparities. The authors also emphasized

the need for clarifying the competencies that should be demonstrated by the gradating physicians. None of the reviewed programs in this study explicitly linked their training elements to the ACGME core competencies. The authors argue that lack of standardized curricular elements and corresponding competencies, variability in learning activities, evaluation methods and lack of measured outcomes across programs pose challenges to comparing curricular utility and effectiveness. This also creates a gap in availability of prototype programs that can be replicated by other programs. The authors recommend that the curricular development should be systematic, based on previous work and educational principles. The authors propounded the need for high-quality, sustained, learner-centered training curricula which are carefully conceptualized, implemented, and evaluated. This will help trainee physicians acquire the core values, attitudes, and competencies to provide high-quality, patient-centered care to disadvantaged populations and to reduce/eliminate disparities (Hasnain et al., 2014)

The authors also recommended that the following essential elements should be included in the curricular planning: a) Clearly stated desired attitudes, values and competencies for learners including trainees' ability for systematic data collection, analysis and synthesis for improving health outcomes, assessment of multifactorial nature of community and individual health issues, and utilization of population level data for policy development, advocacy and program planning to improve the health of the populations served, b) Multi-modal and longitudinal didactic and experiential learning activities including training in community based participatory research and population health research, c) Utilization of formative and summative evaluation methods and assessment of long term impacts on trainees' career and lastly, d) faculty development to ensure quality of curricula (Hasnain et al., 2014).

It is important to review other relevant curricula in GME that focus on health equity. The names may focus on specific aspect, but the concepts and contents overlap. The investigator also feels that understanding of SDOH, cultural competency, and advocacy are required to address disparities. The investigator already has discussed the development of a multifaceted health disparities curriculum (Noriea et al., 2017) and a systematic review on health disparities curricula in GME (Hasnain et al., 2014). The following paragraphs describe a few scoping and systematic reviews that discuss the social determinants of health curricula, diversity curricula, advocacy curricula, cultural competency curricula, and racial justice curricula for the graduate medical trainees and other relevant studies referenced therein.

The scoping review of the diversity curricula included 19 studies (Chung et al., 2023), while the scoping review of the SDOH curricula included 12 studies (Hunter & Thomson, 2019). The scoping review of cultural competency curricula included 62 studies (Atkinson et al., 2022). The systematic review on racial justice and health equity curricula included 11 studies (Chandler et al., 2022) while the systematic review on advocacy curricula included 38 studies (Howell et al., 2019) and the systematic review on health disparities curricula included 16 studies (Hasnain et al., 2014) which is already discussed in sections above. The following paragraphs describe the components of these curricula.

The ACGME provides accreditation for 28 specialties, and only 8 specialties have published about the educational interventions on diversity, equity, and inclusion. Previous studies examining the diversity of curricula found that a majority were implemented in a single residency program (63%), while 32% included residents from multiple programs. Regarding specialty, most were implemented in internal medicine, followed by family medicine, and emergency medicine. The number of total learners ranged from 10 to 181. These 181 participants

attended an implicit bias workshop and 103 of them provided evaluation which was the largest number of participants performing evaluation among the identified curricula. The educational methods included online modules, workshops, to multiyear longitudinal delivery. The most common teaching methods included small group discussions, formal lectures, simulation cases or standardized patients, and online self-directed modules. Unique methods included journal club, field trips or tours, and self-reflective writing. Most of the curricular interventions occurred as a single session with the length of session ranging from 90 minutes to 3 hours while rest included multiple sessions extending over a span of few months to a year (Chung et al., 2023).

Most SDOH curricula were implemented in a single residency program, with a majority implemented in pediatrics, followed by family medicine, and internal medicine. Only two studies indicated multiple subspecialty residency programs participating in SDOH curricula. Most of the SDOH curricula were longitudinal in format that spanned over 1 or more years of residency, and most contained both patient and community exposure, classroom-based components, independent learning and a research or advocacy project. They were organized as blocks, or incorporated as separate tracks or specialties, or included in ambulatory rotations of a residency program. The educational methods included single day experience, interspersed, short learning modules, conferences, or half-day sessions. Learning activities included didactic sessions, videos, resident-led teaching, small group discussions, workshops, games, case-based simulations, role-playing and debates. Unique activities included field trips, patient interviews, and interprofessional collaboration or mentorship (Hunter & Thomson, 2019).

For the cultural competency curricula, the most common specialties represented were psychiatry, internal medicine, and pediatrics. The most common educational methods were didactic sessions/lectures while many studies incorporated clinical or community-based

experiences. The duration of the curricula ranged from 30-minutes (online module) to complete duration of residency program (up to 4 years) that included lectures, electives, and mentoring programs. The mean number of participants was 47 including the largest study (Atkinson et al., 2022).

For the advocacy curricula, most represented specialties were pediatrics, internal medicine, and family medicine. Several curricula involved participants from multiple specialties. Variable teaching methods were used from exclusive use of didactic sessions to modules, to exclusive structuring of experiential learning including mentored community-based advocacy projects and collective group projects. The majority of the curricula included a component of didactic and/or a component of experiential learning. Most of them were formally included in the residency curriculum while others were electives. The duration of the curricula ranged from one-time half-day session to 12 weeks (Howell et al., 2019).

Methods of evaluation utilized the curricula

In the review of the diversity curricula, using Kirkpatrick's 6-step model, most studies measured outcomes on level 1=reaction/satisfaction, level 2=learning. Level 1 outcomes were commonly measured using post-intervention satisfaction surveys, and learning outcomes were commonly measured using pre-and post-knowledge testing. Only 2 studies reported level 3 outcomes, that is, behavioral change using simulation and scholarly output of learners and only one study reported level 4 outcomes, that is, patient outcomes (Chung et al., 2023).

The SDOH curricula measured participant-related outcomes that included frequency of SDOH screening, use of resources, referrals made to supporting services, pre-or post- surveys for knowledge, attitude, competence, preparedness, or skills assessment, measures of resident

engagement, self-reflection, e-portfolios, and achievement of core competencies. Program-specific outcomes included course evaluations, multisource feedback, analysis of cost and time to implement the curricula, and surveys of resident and faculty demographics. Three studies provided academic benchmarks that included scholarly projects, publications, presentations at conferences, donations or grant funding and post-graduate career tracking. Patient-related outcomes were reported in only 3 studies that included results from patient surveys, rate of outpatient clinic use, and patient care outcomes (Hunter & Thomson, 2019).

For the advocacy curricula, formal evaluation was reported in 55% of the studies with no consistent form of evaluation among the studies. Most often reported assessments included pre- and post- evaluation of residents' self-efficacy, attitudes, knowledge around advocacy. Few studies included qualitative assessment including reflective journals, focus groups, and interviews (Howell et al., 2019).

For the cultural competency curricula, evaluation designs included pre-/post- study, post-intervention assessment, and randomized controlled trails. OSCE and semi-structured interviews or focus groups were used as methods of assessment. Only two studies assessed patient outcomes. Innovative ways of teaching included art therapy sessions with psychiatry residents, patients to stimulate discussions on empathy, humility, and respect, and reflective journaling (Atkinson et al., 2022).

For the Health Disparities curricula, all 16 studies utilized some form of evaluation, and the evaluation methods included feedback about program, self-assessments, patient-feedback, community-staff feedback, direct observations, written assignments, quizzes/survey, videotaped reflections, and post graduate career tracking (Hasnain et al., 2014).

On this background, the current study utilized a theory-based, systematic approach to evaluation of the health disparities curriculum. This assessment provided information on the programmatic achievements (achievement of goals and objectives, relevance, and utility of the curriculum) assessment of teaching and learning processes including instructor's competence, and learner achievements (self-efficacy, awareness, attitude towards cultural humility, and engagement). The theoretical framework utilized for this study is described below.

Theoretical Framework

Evaluation has a long history in the United States, especially as it concerns evaluation of schools which can be dated back to the end of the 19th century where the Committee of Ten recommendation set the first example of evaluative standards for U.S. secondary schools. In recent years, the interest in curriculum evaluation has increased markedly resulting in various theories and methods of evaluation. Key to curriculum leadership is the realization that educational evaluation should help the educational process in relating to individual learners in a better way. The purpose of curriculum evaluation should be based on two concepts: Merit and worth. Merit refers to the intrinsic value of an entity. It is inherent, implicit, and independent of any application. Merit is established without contextual reference. In contrast to merit is worth which states the value of an entity with reference to context or application. It can be considered as the "payoff" value for a given institution or a group of people. That is why, the purpose of a curriculum evaluation should be concerned with assessing both merit and worth (Glatthorn et al., 2015). The foci of curriculum evaluation can be concerned with assessing the value of a program of study (all planned learning experiences for a group of learners over a multiple year period), a field of study (all planned learning experiences in a given discipline or area of study over multiple years), or a course of study (all planned learning experiences in a given field of study

for a period of 1 year or less). Consideration of these aspects provides the following definition of curriculum evaluation: “The assessment of the merit and worth of a program of study, a field of study or a course of study.” (Glatthorn et al., 2015). Another definition of curriculum evaluation states that it is the process of collecting data on a program to determine its value or worth with the aim of deciding whether to adopt, reject or revise the program.

A curriculum can be evaluated for the following reasons: a) To identify strengths and weaknesses of an existing curriculum on the basis of intended design, plan and/or implementation, b) If done during the curriculum implementation, it is for monitoring purpose to see if the curriculum is producing intended/desired results, c) As terminal assessment to see if the results equaled or exceeded the standards set, and lastly, d) to provide information to various stakeholders for policy recommendation/decision making.

A variety of models exist for curriculum evaluation such as Bradley’s effectiveness model, Cronbach’s model, Eisner’s Connoisseurship model, Hilda Taba model, Scriven’s goal free model, Stake’s responsive model, Stufflebeam’s CIPP model and Tyler’s Objectives-centered model. These models define the parameters for evaluation (Glatthorn et al., 2015). For this investigation, the researcher has selected Stufflebeam’s CIPP model (Context-Input-Process-Product). Stufflebeam proposed this model in 1971 and an update to the model was provided in the year 2003. This model provides a comprehensive framework for guiding formative and summative evaluations that can be utilized for programs, projects, products, personnel, institutions, and systems (Stufflebeam, 2003).

Stufflebeam's CIPP Model for Evaluation

Stufflebeam et al. (2000) defined evaluation as a systematic investigation of the merit and/or worth of a program, project, service, or other intended object of service. They also stated that "operationally, evaluation is the process of delineating, obtaining, reporting and applying descriptive and judgmental information about some object's merit and worth in order to guide decision making, support accountability, disseminate effective practices, and increase understanding of the involved phenomena" (Stufflebeam et al., 2000).

The CIPP evaluation model provides a comprehensive framework for conducting and reporting evaluations. The model is intended for the use of a broad range of service providers. The CIPP model can be used for internal evaluations, self-evaluations as well as external evaluations. The model has been employed extensively throughout the U.S. and internationally in large and small, short-term, and long-term investigations. Various disciplines and service areas, including education, housing and community development, transportation safety, and military personnel review systems have applied the CIPP model (Stufflebeam et al., 2000).

The letters in the acronym CIPP stand for the model's core concepts: Context, input, process, and product evaluation. Context evaluations assess needs, problems, assets, and opportunities as the base for defining goals and opportunities and for assessment of the outcomes. Input evaluations assess alternative approaches to meeting needs as a means of planning programs and allocating resources. Process evaluations assess the implementation of the plans/activities and later can be utilized to explain the outcomes. Product evaluations identify intended and unintended outcomes. This enables the process to be on track and in determining its effectiveness. Employing these 4 interrelated evaluations help in a) initiating, developing, and installing sound programs, projects, or services; b) strengthening existing programs or services;

c) meeting the accountability requirements; d) disseminating effective practices; e) contributing to the knowledge in the particular field/area of service; f) understanding and assessment of the merit and worth of the program/project/service (Stufflebeam et al., 2000)

Code of Ethics underpinning the CIPP Model

Stufflebeam et al. (2000) described the code of ethics guiding the CIPP model. They stated that this model has a strong orientation to service and the principles of a free society. The focus of the model is on providing sound information that will enable the service providers to regularly assess and improve services through effective and efficient use of the resources, time, and technology to appropriately and equitably serve the well-being of the rightful beneficiaries. To achieve this, the evaluators and clients need to identify and involve rightful beneficiaries, clarify their needs for services, obtain information of use in designing responsive programs and services, assess and help guide the effective implementation of services and ultimately, assess the service's merit and worth. One of the core aspects of the CIPP evaluation is that it needs to be grounded in the democratic principles of equity and fairness and to achieve this, the model emphasizes on engaging and informing the stakeholders: People who are intended to use the findings, those who contribute to the findings and those who can be affected by the evaluations (Stufflebeam et al., 2000).

The authors further elaborated that the CIPP model has an objectivist orientation. Objectivist evaluations are based on the theory that moral good is objective and independent of personal or human feelings. The objectivist evaluations are firmly grounded in ethical principles; strive to control bias, prejudice, and conflicts of interest in determining merit and worth; utilize and justify established standards of merit; obtain and validate information from multiple sources and search for the best answers and set forth/justify best available conclusions about the

evaluand's merit and worth; fairly and honestly inform all rightful beneficiaries. It also involves subjecting the evaluations to independent assessments as well as delineating the future needs for evaluations (Stufflebeam et al., 2000).

The CIPP model can be used to evaluate programs, projects, subcomponents of the programs or projects, and/or personnel. The CIPP model aligns itself with the systems view of education and human service. It can be used to guide individual studies as well as to guide institutional decision makers and other stakeholders. Fundamentally, this model is designed to promote growth, with the purpose of improving a program/project or service. The CIPP model orientation does not discount or exclude the possibility that some programs/services may not be improved, and such should be stopped to improve the functioning of the organization by redistribution of resources (Stufflebeam et al., 2000).

Context Evaluation

Stufflebeam et al. (2000) described that context evaluation assess needs, problems, assets, and opportunities within a defined environment. Needs are those things that are necessary or useful for fulfilling a defensible purpose. Problems are the impediments to overcome in meeting the targeted needs. Assets include available expertise and services enabling the fulfillment of the targeted purpose and opportunities include supportive efforts to meet the targeted needs and to solve the problems. Defensible purpose is what needs to be achieved in alignment with the institution's mission within ethical and legal boundaries. Context evaluations can be initiated before, during or after a project, program, or service. Context evaluations, if initiated during or after a program/project/service implementation, are conducted along with input, process, and product evaluation. Here, context evaluations are utilized to assess the established goals and in assessment of the effort's significance in meeting the needs of the

beneficiaries. Another use of context evaluations is to assess the significance of what an improvement effort accomplished. Here, the organization/individual assesses whether the improvement effort effectively addressed the targeted needs and goals. A context evaluation's main objectives are to: a) Describe the context for the intended service; b) Identify intended beneficiaries and assess their needs; c) Identify problems or barriers to meeting the needs; d) Identify area assets and funding opportunities that could be used to address the targeted needs; e) Assess the clarity and appropriateness of program, instructional, or other service goals (Stufflebeam et al., 2000).

Input Evaluation

Input evaluation is focused on helping prescribe a program/project, or other interventions to improve services to intended beneficiaries. These evaluations assess the program/project/service strategy, associated work plan and budget for the effort. Input evaluation is considered as the precursor of the success or failure and efficiency of the effort (Stufflebeam et al., 2000).

Process evaluation

Process evaluation provides a check on the implementation of an effort along with documentation of the process, including the changes in the plan and/or poor execution. The goals of the process evaluation include providing feedback on the planned activities (on schedule or not, going as planned or not) and efficiency of conducting the activities; help in identifying problems in implementation and making needed changes in the activities/plans; and to assess the extent to which the participants accept and carry out their roles; and the quality of process as

judged by the observers and participants. Process evaluation can aid accountability as well as for interpretation of product evaluation results (Stufflebeam et al., 2000).

Product evaluation

Stufflebeam et al. (2000) described that the purpose of product evaluation is to measure, interpret and judge the achievements of a project/program/service and the main goal is to assess the extent to which the needs of the beneficiaries were met. The product evaluation is intended to assess both positive and negative, intended, and unintended outcomes. Such feedback is important both during the effort and at the end of the effort. The product evaluation also comprises of the stakeholders' judgements of the efforts/enterprise and whether the outcomes justify the investments. The evaluation also consists of analysis of poor outcomes: whether they were a result of a poor implementation or an unsound plan.

CIPP-based Evaluations in the Medical Education

Although CIPP model has been extensively used in other countries in the context of graduate medical education, a PubMed search for the use of CIPP within the context of U.S. Graduate Medical Education returns a very small number of articles. In this regard, this model can find much use in the assessment of health disparities or other relevant curricula because it can serve as a tool for generating data relating to the stages of the curricular operation. The model emphasizes decision making with respect to the outcomes and curricular improvement.

When a systematic review of the use of CIPP model in medical education was conducted, 40 studies were identified by the author out of which 11 were in the field of medicine. A majority of these studies in the field of medicine were from Iran and most studies conducted evaluation of nursing curriculum. Only two studies were from USA, one was focused on the

development of the service-learning curriculum and other focused on the end-of-life care education within a nursing program (Toosi et al., 2021). The investigator of the current study has not identified any other study that employed the CIPP framework for curriculum evaluation in the field of graduate medical education within the USA. The results of the systematic review on CIPP showed that most of the studies utilized quantitative methodology, utilized cross-sectional design, were descriptive and utilized researcher-made questionnaires to evaluate the educational programs (Toosi et al., 2021). The majority of the CIPP-based studies included in the systematic review were aimed at examining the attitudes of the students, instructors, and those involved in the quality of the educational program. Most studies examined the learner's perspectives on the educational programs. A majority of the studies reported relatively high satisfaction with the program, while a few reported moderate or low satisfaction levels. One of the drawbacks of the studies in the CIPP systematic review was that they were focused on answering explicit and clear questions, rather than on viewing and measuring the overall value and competence of the educational programs. The authors of the CIPP systematic review also stated that a majority of the studies took a goal-oriented approach, and evaluated final achievements instead of a systematic approach where CIPP was used prognostically, gradually along with the development of the program (Toosi et al., 2021).

Chapter Two Summary

This chapter provides a review of the health disparities, health care disparities within U.S. and the factors influencing these disparities. The chapter discusses the role of medical mistrust, attitudes and biases, cultural competence, and racism in health care in creating and perpetuating these disparities. Further, the chapter discusses the role of physicians, especially, in the near future, where they will be required to care for a very diverse population. In this scenario,

education on health and health disparities and training in cultural competency can enable the physicians in providing patient-centered, quality care to their patient populations. This education can also serve as tool in reducing the variability in outcomes, thereby reducing the disparities. The health disparities and cultural competency education when coupled with meaningful community engagement for physician can enable physicians in leading the efforts for eliminating health and health care disparities and achievement of health equity and social justice. The chapter later delves into the role of Graduate Medical Education, policy positions of prominent medical organizations on health disparities/ health care disparities education. The chapter also discusses the literature on existing health disparities/diversity/cultural competency/advocacy and racial justice curricula within GME where there is large gap by specialty/residency programs in the availability of such curricula. The chapter also identifies various barriers in the development and implementation of health disparities curriculum. When such curricula are available, there is great variability in content, identified competencies and learner outcomes. One of the important gaps is in linking the learner outcomes to ACGME identified competencies. There is also lack of evidence on translation of such education in clinical practice/in improving clinical outcomes. There is also scarcity of available evaluations for existing curricula. Lastly, the chapter discusses Stufflebeam's CIPP model as the theoretical framework for this evaluation research. In the next chapter, the methodology of the current study is discussed.

CHAPTER III

METHODOLOGY

This chapter presents an overview of the research methodology utilized to conduct the evaluation of the Health Disparities Curriculum. The purpose and setting of the evaluation, research design, methodology, instrumentation, and psychometric properties (validity and reliability), data collection, data analysis procedures, and protection of human subjects for this study are discussed.

Purpose of the Study

The purpose of this study was to evaluate a Health Disparities curriculum in meeting its stated goals and objectives, the teaching and learning processes, and the outcomes of the health disparities curriculum through the perspectives of the medical residents, using the Stufflebeam's CIPP model as the theoretical framework. The evaluation framework using the CIPP model and the research questions that guided this study are as follows:

Table 3. 1

Evaluation Framework for the Health Disparities Curriculum using the CIPP Model

Context	Input	Process	Output
Perceptions on the achievement of goals and objectives of the Health Disparities Curriculum	Inputs regarding the Health Disparities Curriculum	Perceptions on didactic and experiential components, Instructor, relevance of the sessions and review of materials	Outcomes of the Health Disparities Curriculum: Change in self-efficacy, awareness, attitude, Change in engagement, and perceptions on utility of the curriculum.

Research Questions

After much consideration of the purpose and nature of conducting an evaluation of a curriculum, the following questions were developed to guide the evaluation and frame the results and discussion. For each construct of the evaluation, an overarching research question was created, followed by one or more specific guiding questions.

Overarching research question for context evaluation: What were the perceptions of the medical residents on the Health Disparities Curriculum (HDC) in achieving its stated goals and objectives?

- R.Q.1a) Was there a difference among the medical residents based on age, gender, race, medical specialty, and residency year in their perceptions about whether the health curriculum achieved its stated goals and objectives ?

Overarching research question for Input evaluation: What inputs were provided by the medical residents to improve the Health Disparities Curriculum?

- R.Q. 2a) What alternative approaches were suggested by the medical residents?

Overarching research question for process evaluation: What were the differences among the medical residents on their perception of the teaching and learning processes of the health disparities curriculum?

- R.Q. 3a) Was there a difference (measured by selected demographic factors age, gender, year in residency program, and specialty) in the number of sessions attended?
- R.Q. 3b) Was there a difference among the medical residents in their perceptions of the teaching and learning processes of the health disparities curriculum?

    - 3b1) Was there a difference among the medical residents in their perceptions about the relevance of the curriculum content?
    - 3b2) Was there a difference among the medical residents in perceptions of the instructor's competence?
- R. Q. 3C) Was there a difference among the medical residents in the review of materials ?

Overarching research question for product evaluation: What were the participant outcomes after taking the health disparities curriculum?

- R.Q. 4a) Was there any difference among the medical residents in perceived self-efficacy in identifying and addressing health disparities and health care disparities before and after implementation of the curriculum?
- R.Q. 4b) Was there any difference among medical residents in awareness of the factors influencing disparities?
- R.Q. 4c) Was there any difference among the medical residents in attitude towards cultural humility?
- R.Q. 4d) Was there any difference among the medical residents in engagement on disparities?
- R.Q. 4e) Was there any difference in perceptions among medical residents about the utility of the health disparities curriculum?

Setting of the study

The study setting was the University of Illinois College of Medicine at Peoria which is a sponsoring institution for fifteen residency programs and eight fellowship programs approved by the Accreditation Council for Graduate Medical Education (ACGME). The Peoria campus, one

of the four medical campuses of the University of Illinois College of Medicine, also serves as a four-year medical school. For the academic year 2021-22, there were a total of 319 residents and fellows enrolled within the fellowship and residency programs. Total residents' enrollment was 287 for the academic year 2021-22 within the following residency programs: Internal Medicine, Internal Medicine-Transitional, Internal Medicine-Pediatrics, Family Medicine, Psychiatry, Emergency Medicine, Pediatrics, Diagnostic radiology, General Surgery, Neurosurgery, Neurology, OBGYN.

Inclusion criteria, study population and sampling

Any residents within the first year to seventh year of residency, aged 18 years and above within the twelve residency programs affiliated with the UICOMP were eligible to participate in the survey. The study utilized non-probability convenience sampling. The sample size required at 5% margin of error and 95% confidence interval was 165 respondents.

Study design

Mixed Methods approach

The study utilized a cross-sectional study design and a mixed methods approach to data collection. Quantitative data included closed-ended responses while qualitative data involved open-ended responses. The mixed methods approach emphasized the triangulation of the quantitative and qualitative data. With triangulation, the researcher combined these two methods to act in continuity rather than as separate methods. For this study, a convergent parallel mixed methods approach was utilized which allowed the researcher to provide a comprehensive analysis of the research problem by converging or merging qualitative and quantitative data. This mixed methods convergent study with pragmatic worldview included: 1) Collection of quantitative and qualitative data using surveys with closed and open-ended questions; 2)

Analysis of quantitative and qualitative data separately using pertinent software programs (SPSS 28.0 and NVivo 12 in this case); 3) Merging of the results, and 4) Interpretation of all data to provide a better understanding of the problem (Creswell, 2014). The advantages of employing a cross-sectional design included less financial expenditure, ability to analyze multiple respondents without loss to follow-up and shorter duration required to complete the study. The disadvantages of this study design include limitation in the response rates, inability to make causal inferences, and susceptibility to sampling bias (Setia, 2016; Wang, X., and Cheng, Z., 2020).

Data Collection

IRB approval for the study was received from both the University of Illinois College of Medicine at Peoria (UICOMP) and Georgia Southern University in May 2022. After the approval, primary data collection began from June till September 2022. Initially, the method of data collection involved self-administered, electronic surveys using Qualtrics. Participation in the survey was voluntary, the respondents were able to stop participating at any time and the respondents could participate only once. No identifying information was collected on the survey, confidentiality of responses was maintained and access to the data was restricted to the research team only.

A cover letter describing the purpose of the study, rights of the participants, investigator and IRB contact along with the Qualtrics link for the survey were emailed to the medical residents. Accessing the survey link implied the respondent's consent to participate in the study. This was explicitly mentioned in the cover letter. Additionally, the Qualtrics link was displayed at the end of the Health Disparities Curriculum sessions. To improve the participation from the residents, program involvement was sought: the cover letter with the survey link was emailed to the program coordinator who then emailed it to all the residents within the specific residency

program. To improve participation from those program residents, an email was sent to the program leadership and the chief residents. The chief residents cooperated to share the cover letter with the survey link to the residents within their programs. If the residency program had a group texting or a What's app group, the chief residents were encouraged to utilize those platforms for sharing the cover letter with the survey link. An amendment to the initial research proposal was requested to add paper-based surveys as the additional method of data collection. The amendment was approved by both UICOMP and Georgia Southern IRBs. The paper-based surveys included cover letter, followed by consent to participate (indicated as Yes/No) and a question at the beginning of the questionnaire where the participants were asked to indicate if they had submitted an electronic survey response (Yes/No). The paper-based surveys were distributed during the scheduled Health Disparities Sessions to all the attendees. The respondents would place their survey questionnaires (completed/not completed) in a box near the exit of the classroom. The investigator would collect the surveys after all attendees left the classroom at the end of the session.

Instrumentation

Survey Questionnaire

The development of the survey questionnaire was guided by the literature and research questions for the study. There is a lack of Health Disparities Curricula in residency programs. This lack is even more pronounced when we look by medical specialty. This gap is compounded by the lack of theory-based evaluations of such curricula. Given these reasons, the review of existing survey questionnaires from CIPP-based evaluations in the medical field served as a guideline to develop the instrument for this study. Content face validity of the instrument was established in accordance with the experts on the dissertation committee and internal consistency

was established by conducting a Cronbach's alpha coefficient analysis which was reported as .912. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer the coefficient is to 1.0, the greater is the internal consistency of the items (variables) in the scale. Cronbach's alpha coefficient increases either as the number of items (variables) increases, or as the average inter-item correlations increase (i.e., when the number of items is held constant) (University of Virginia Library Research Data Services and Sciences, n.d.). The internal consistency reliability was analyzed by calculating the Cronbach's coefficient alpha through the reliability analysis conducted on SPSS 28.0.

The survey questionnaire consisted of 47 items (Appendix A). There were six demographic questions. The context evaluation was based on 5 questions that assessed perceptions on achievement of goals and objectives by the Health Disparities Curriculum. As part of the process evaluation, the respondents were asked to report the number of sessions of the HDC that were attended (8 questions), and their perceptions on the relevance of these sessions to them (3 questions), feedback on the instructor's competence (4 questions), and one question asking the residents if they reviewed the materials shared with them. All these questions were closed-ended with responses choices ranging from Strongly disagree to Strongly agree on a 5-point Likert scale. As part of the product evaluation, participants were asked to report on their self-efficacy before and after implementation of the Health Disparities Curriculum on a set of 5 questions, on their awareness measured on a set of 4 questions, and attitude towards incorporating cultural humility skills in their patient encounters (1 question). The response choices ranged from strongly disagree to strongly agree on a 5-point Likert scale for these questions. Respondents were asked to report on change in their engagement with respect to conversations around disparities, scholarly output, and community partnerships. If a respondent

checked an engagement category, that was counted as a positive (Yes) response. Lastly, the respondents reported their perceptions on the utility of the Health Disparities Curriculum on a set of 4 questions. The response choices to the close-ended questions ranged from strongly disagree to strongly agree on a 5-point Likert scale. The literature suggested that use of descending order in response choices (strongly agree to strongly disagree) generate more positive responses, that is why, researcher employed descending response order (strongly disagree to strongly agree) as a strategy to avoid the response-order effects associated with satisficing and acquiescence bias.

The survey questionnaire contained nine open ended questions, responses to these questions served as the qualitative data for the study. The respondents were asked to provide their feedback on the didactic, video screening and population health workshop sessions, if they felt that the content was not relevant to them, if the content didn't meet their expectations, suggestions to improve the health disparities curriculum and most useful content that they had learned.

External Validity of the instrument

It refers to the extent to which the results of a study can be generalized to a group larger than the group of study participants (Bhandari, 2020; Creswell, John W. & Creswell, 2018; Sullivan, 2011). For making such generalization, the researcher believed reasonably that the variables studied in this research might not be similar to the characteristics of the larger population that is different from the medical residents. Although the composition of the residency programs varies by geographic locations and medical specialties and the sample in this study might not be representativeness of a larger population, the investigator believes that this sample can be considered as homogenous convenience sample considering similar shared attributes between the sampling frame and the sample, thus, enhancing its generalizability (Jager

et al. 2017). The researcher ensured use of appropriate statistical tests and by avoiding violations of statistical assumptions, the threats to the validity were further reduced. (Bhandari, 2020; Creswell, John W. & Creswell, 2018; Sullivan, 2011).

The errors of measurement and errors of instrumentation affect reliability negatively (Drost, 2011). Following measures were employed in the study to enhance reliability: clearly written survey items, easy to understand survey instructions, and by following the rules for scoring of the instrument stringently. The predominant method to improve reliability is to make the survey questionnaire/test longer (Drost, 2011), which was also followed in this study.

Research questions, Instrument Items and Data Analysis

Table 3. 2

Research Questions, Instrument Items and Data Analysis Matrix

Number	**Research Questions**	**Variables**	**Variable Classification**	**Statistical Tests**
Items 7-11	**Overarching research question for context evaluation:** What were the perceptions of the medical residents on the Health Disparities Curriculum achieving its stated goals and objectives? **R.Q. 1a**) Was there a difference in perceptions among the medical residents about whether the health curriculum achieved its stated goals and objectives based on age, gender, race, medical specialty, and residency year?	Context evaluation items, Composite Context scale, Age, Gender, Race, Year of residency, Medical specialty, Total attended sessions	Continuous, Ordinal, Nominal/ Categorical	Descriptive statistics (Mean, Standard deviation, frequencies), Principal Component Analysis, Independent sample T-test
Items 15, 19, 22, 24, 26, 28, 35, 37, 47	**Overarching research question for Input evaluation**: What inputs were provided by the medical residents on improving the Health Disparities Curriculum? **R.Q. 2a)** What alternative approaches were suggested by the participants?			Qualitative Data: Thematic Analysis

Items 12, 13, 14, 16, 17, 18, 20, 21, 23, 25, 27, 29, 30, 31, 32, 33	**Overarching research question for process evaluation:** What were the differences among the medical residents on their perception of the teaching and learning processes of the health disparities curriculum? **R.Q. 3a)** Was there a difference in the number of sessions attended by selected demographic factors age, gender, year in residency program, and specialty? **R.Q. 3b)** Was there a difference in perceptions among the medical residents on the teaching and learning processes of the health disparities curriculum? **3b1)** Was there a difference in perceptions among the medical residents about the relevance of the curriculum content? **3b2)** Was there a difference in perceptions among the medical residents on the instructor's competence? **R.Q. 3C)** Was there a difference among the medical residents in the review of materials?	Composite Content Relevance score, Composite Instructor competence Score, Material review Score, Age, Gender, Race, Year of residency, Medical specialty, Total attended sessions	Continuous, Ordinal, Nominal/ Categorical	Descriptive statistics (Mean, Standard deviation, frequencies), Cross tabulations, Chi-square test, Principal Component Analysis, Independent sample T-test
Items 34, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46	**Overarching research question for product evaluation**: What were the participant outcomes after taking the health disparities curriculum? **R.Q. 4a)** Was there any difference among the medical residents in perceived self-efficacy in identifying and addressing health disparities and health care disparities before and after implementation of the curriculum? **R.Q. 4b)** Was there any difference among medical residents in awareness of the factors influencing disparities? **R.Q. 4c)** Was there any difference among the medical residents in attitude towards cultural humility? **R.Q. 4d)** Was there any difference among the medical residents in engagement on disparities? **R.Q. 4e)** Was there any difference in perceptions among medical residents about the utility of the health disparities curriculum?	Composite Self-efficacy score, Composite Awareness score, Cultural Humility Attitude Score, Composite Discussion Score, Composite scholarly activity score, composite community partnership score, Age, Gender, Race, Year of residency, Medical specialty, Total attended sessions	Continuous, Ordinal, Nominal/ Categorical,	Descriptive statistics (Mean, Standard deviation, frequencies), Principal Component Analysis, Paired sample t-test, Independent sample T-test,

Quantitative Data analysis

The questions on the survey served as the variables for analysis. The survey responses from electronic and paper-based surveys were transferred from Qualtrics to MS-Excel and then to SPSS 28.0 software (IBM Corp., 2021). The responses were coded and checked for completeness, consistency, and uniformity. The dataset was cleaned using spot-checking and eyeballing to ensure correct data entry. Further, the data were cleaned by the following procedures: Recoding existing variables, creating new variables, computations, and by data labelling and formatting. After cleaning, results were inspected to verify correctness. The data were saved after each step and backed up (UCLA Institute for Digital Research and Education Statistical Consulting, n.d.; WSU Office of Assessment for Curricular Effectiveness, 2020).

After all data were coded and cleaned, descriptive statistics including mean, standard deviation and frequencies were performed. Principal component analysis (PCA) was performed for specific variable reduction within context-process and product evaluation items. The aim of PCA was to reduce a larger set of variables into a small set of variables called 'Principal components' that accounted for most of the variance in original variables. Principal component analysis results were interpreted based on communalities, eigenvalue, scree-plot. Principal components were extracted based on factor loadings (Laerd Statistics. n.d.). These principal components were utilized to create composite scores, which were later used for paired sample t-test or independent sample t-test. Bivariate relationships were assessed using chi-square test in process evaluation.

Qualitative Data Analysis/Input Evaluation

This research utilized thematic analysis to perform the analysis of the qualitative data. The six steps framework developed by Braun and Clarke (2006) was utilized: 1) familiarization

with data (transcription of data from electronic and paper based surveys, data immersion by reading the responses multiple times); 2) generating of initial codes; 3) searching for themes (collating codes into potential themes); 4) reviewing themes (development of a thematic map of the analysis and checking the themes relevance in relation to coded extracts); 5) defining and naming themes (generating clear definitions for each theme); and 6) producing of the report (Description of themes/subthemes along with selected extracts in relation to the research questions). Two coders, the investigator, Dr. Gauri Shevatekar and Dr. Kevin Wombacher, Assistant Dean for Medical Education and Assessment coded the data independently.

Justification for using Thematic Analysis

This flexible, qualitative research method can be applied to a variety of topics, research questions and epistemologies. There were clear advantages of using thematic analysis for this research: 1) It was a flexible method that could be modified as per the needs of the study, and it could produce detailed, complex and rich data; 2) This method was suitable for novice researchers, unfamiliar with qualitative research because this method did not require technical or theoretical knowledge of other qualitative methods, and it was easy to learn; 3) It was a suitable method to analyze the perspectives of the research participants, to identify similarities and differences among them and to develop unanticipated insights; 4) Given its well-structured approach towards data manipulation, thematic analysis was useful for summarizing the key data features and for developing an organized and clear final report, 5) A rigorous thematic analysis can result into trustworthy and insightful findings. For all these reasons, thematic analysis was utilized as a method for qualitative data analysis (Braun & Clarke, 2006; Nowell et al., 2017). Following steps were taken during the qualitative analysis:

Phase 1: Familiarization with the data. This first step involved organization and preparation of the data by transcribing the responses. The responses from the electronic surveys and paper-based surveys were merged into an MS-Excel file. The responses were checked for accuracy. This was followed by data immersion where the researcher conducted repeated readings of this data to get a general sense of the information and to reflect on the meaning, and to identify patterns. As the data was de-identified, only the participant number was utilized to organize the data. **Phase 2: Generation of initial codes:** The researcher worked systematically across the dataset giving full attention to each data item. Initially, the codes were identified, all data items were coded and collated together within each code. The data items were coded for as many potential patterns/themes as possible. The coding process was carried out using the NVivo Software version 12.0 and a codebook was developed that contained definition of themes, and a list of codes. **Phase 3: Searching for themes:** After all data were coded and collated, this phase involved sorting the different codes into themes, followed by collating relevant coded data extracts within the identified themes. At the end of this phase, a collection of themes, subthemes and extracts of data that were coded in relation to them were generated. **Phase 4: Reviewing themes and Phase 5: Defining and naming themes:** In phase 4, the themes were reviewed at the level of the coded data extracts to ascertain that they formed a coherent pattern (Level1). Next, the validity of the themes was considered in relation to the whole data set (Level 2) and a thematic map was generated reflecting the meaning evident in the dataset. In phase 5, the specifics of each theme were considered, and clear definitions and names were generated for each theme and subtheme. **Phase 6: Producing the report:** Report was created describing each of the theme and subtheme, and relevant examples from the data were provided as examples of theme/subtheme.

Qualitative Validity and Reliability

Validity is considered as one of the strengths of qualitative research and it is based on establishing if the findings are accurate from the standpoint of the researcher, participants, or the readers. The researcher provided descriptions to convey the findings about a theme to make the results richer and more realistic. (Creswell, J. & Poth, 2018). To ensure qualitative reliability, the researcher checked the transcripts to make sure they did not contain obvious mistakes. Codes were created with the consensus from both the coders. The coders constantly compared the data against codes so that there was no drift. Themes and subthemes were created with consensus from both coders (Creswell, J. & Poth, 2018). The intercoder reliability was assessed through Kappa value, which was 0.784. Here, it is important to describe trustworthiness based on credibility, dependability, and transferability for the qualitative data.

Credibility. It can be defined as the confidence that can be placed in the truthfulness of the research findings. For this study, credibility was achieved by peer debriefing. This was carried out by seeking feedback from the dissertation committee members (Guba, 1981; Krefting, 1991).

Transferability. Transferability relates to the degree to which the result of the study can be applied to other contexts with other participants. Although generalization is not an applicable feature of the qualitative analysis, providing a description of the context, research processes, participants and results would allow other researchers to analyze similarities and replicate the research (Creswell, 2014).

Dependability. It means that the findings of the study are supported by the data received. In this study, dependability was achieved by the peer examination strategy which is similar to peer-

debriefing. Peer examination is achieved by discussing the research processes and findings of the study with the dissertation committee members(Guba, 1981)

Mixing of Data

The mixing of data occurred at the end by merging quantitative and qualitative data sets. Mixing comprised of comparing separate results of these data and finally, the researcher interpreted how the qualitative and quantitative data related with each other.

Ethical considerations

Institutional Review Boards

The research proposal was submitted to the Georgia Southern University and the University of Illinois College of Medicine at Peoria (UICOMP) institutional review boards for approval and to protect the participants from any harm which was subsequently approved by both IRBs.

Informed and Voluntary Participation

All participants were informed of the purpose of the study, participants rights, IRB, and investigator contacts. All participants were informed that their participation was voluntary, and they could refuse or withdraw their participation at any time before or during the survey without any penalty. There were no social, economic, psychological, or legal risks to the participants. The questionnaire contained no sensitive questions. The study was determined to be of minimal risk to the participants and the topic under study was not considered as sensitive. No incentive was offered to participate in the surveys.

Confidentiality and Privacy of Data

Data collected through surveys did not contain any identifying information, effectively protecting privacy and confidentiality of the participants. The paper-based surveys were stored in a locked cabinet in the researcher's office. The electronic data (including qualitative and quantitative data, MS-Excel and MS-Word documents, SPSS analysis and outputs, and results) were password-protected and stored on encrypted electronic devises and secure servers. All data were backed up periodically on a secure, encrypted hard drive to prevent the loss of data. The data stored on the server and on the back-up hard drive will be destroyed after three years. The electronic devices used for data transfer and data sharing (flash drives, hard drives) were encrypted and password protected. The data/findings were shared using secure internet portals (UIC or Georgia Southern email servers). The confidentiality of the participants will be maintained by restricting the data availability to the research team members only.

Chapter Three Summary

The purpose of this study was to evaluate the Health Disparities Curriculum using the Context-Input-Process-Outcome (CIPP) theoretical framework by utilizing the graduate learners/residents' feedback received through surveys. This chapter described the methodology and analytic procedures used to accomplish the purpose of the study. The results of the study will be discussed in Chapter 4.

CHAPTER IV

RESULTS

Chapter four presents the results of this study pertaining to the context-input-process-product (CIPP) based evaluation of the Health Disparities Curriculum (HDC) from the responses provided by the medical residents within twelve residency programs at the University of Illinois College of Medicine at Peoria (UICOMP). The CIPP constructs guided the development of the survey questions and provided the framework for the results.

The data will be presented in the following order: Description of study sample based on the demographic variables, followed by the results of the study by the evaluation constructs and associated research questions. The statistical analyses performed included frequencies, descriptive statistics, bi-variate correlation analysis, principal factor analysis and group difference tests (Independent sample t-test, and chi-square test of independence).

Description of the Sample

For a few residency programs, even after multiple attempts to emailing, residents did not participate in the survey. Despite these repeated attempts to improve participant recruitment, the participation rate among the medical residents remained low. A total of seventy-one responses were received using the electronic method. The low response rate necessitated an additional mode of data collection. Sixty-three completed questionnaires were collected using the paper-based questionnaire. A total of one hundred and thirty-four responses were collected from the medical residents within the first to seventh year of residency and recent graduates using the electronic and paper-based survey methods. The response rate for the study was 46.68 percent residents were above 18 years of age. Responses from those respondents who had attended at

least one session of the health disparities curriculum were included in the analysis, this led to exclusion of four respondents who had indicated that they did not attend any sessions. The final sample consisted of 130 usable responses.

The demographic data collected included age, gender, race, ethnicity, year of residency and residency program. All residents were above 18 years of age. Most of the respondents were 26 to 30 years of age, (57.7%), followed by those in the age group 31 to 35 years, (31.5%). Four respondents did not report their age (3.1%). For the remainder of the analyses, the age variable was converted into a dichotomous variable, with 77 respondents aged between 18 to 30 years (59.2%) and 49 residents aged thirty-one years and above (37.7%).

More than half of the medical residents identified as male, (54.6%), with 36.9% identifying as female. Only two respondents (1.5%) identified as non-binary/gender fluid or other, therefore, the gender variable was collapsed into a dichotomous variable with male and female categories.

More than half of the medical residents identified themselves as Caucasian/White, 70 (53.8%), followed by those who identified themselves as Asian, 29 (22.3%), The remainder of the medical residents identified as the following: African American/Black, 10 (7.7%), belonging to two or more races, 5 (3.8%) and (12.3%) respondents did not answer the race question. The majority of the medical residents (78.5%) did not identify as Hispanic, Latino or Spanish origin. For analysis, the race variable was collapsed into a dichotomous variable with 70 respondents identifying as White (53.8%) and 44 respondents identifying as non-White (33.8%).

Most of the respondents were completing a residency in non-primary care specialties, (49.2%), followed by respondents within primary care specialties, (24.6%). Twenty-six percent

of respondents did not report their specialty. The breakdown of respondents by specific specialties is listed in Table 4.1. For the remainder of analyses, the specialty variable was collapsed into a dichotomous variable with residents within primary care vs. non-primary care specialties as the two categories.

The majority of respondents (32.3%), were in the second year of their residency program, followed by respondents in the third year of their residency program, (31.5%), first year of residency, (14.6%), and fourth year of their residency, (9.2%). For the purpose of analyses, the variable was collapsed into a dichotomous variable with 61 residents within first and second year of residency program (46.9%), and 59 residents within third to seventh year of residency programs along with recent graduates (45.4%). Ten respondents (7.7%) did not indicate their year within the residency program.

The respondents were asked to indicate the number of HDC sessions they had attended for each of the following academic years: 2019-20, 2020-21 and 2021-22. The curriculum included 4 didactic sessions, 2 video screening sessions during 2019-20 academic year (total 6 sessions). From 2020-21, the curriculum incorporated population health workshop, one every year. Thus, a total of 20 sessions were conducted per program from 2019-20 to 2021-22. Seven respondents (5.4%) indicated that they had attended at least 1 session and 15 (11.5%) respondents indicated that they had attended all 20 sessions. A mean of 9.08 number of sessions were attended by the respondents. As a result, the total sessions attended variable was collapsed into a dichotomous variable of 1 to 10 sessions (63.8%) and 11 to 20 sessions (36.2%). The remaining results will be reported by the construct of the CIPP framework and associated research questions.

Table 4. 1

Descriptive Statistics of the Demographic Variables of the Total Sample of the Respondents

Variable	Frequency (n)	Percentage (%)
Age		
18 to 30 years	77	59.2
31 years and above	49	37.7
Gender		
Male	71	54.6
Female	48	36.9
Race		
Caucasian/White	70	53.8
Asian	29	22.3
African American/Black	10	7.7
Two or more races	5	3.8
Ethnicity		
Not Hispanic, Latino or Spanish origin	104	78.5
Hispanic, Latino or Spanish origin	8	6.2
Residency Program		
Primary Care Specialty	32	24.6
Non-Primary Care Specialty	64	49.2
Year of Residency		
1st and 2nd year residents	61	46.9
3rd to 7th year residents and recent graduates	59	45.4
No. of sessions attended		
1 to 10 sessions	83	63.8
11 to 20 sessions	47	36.2

Note: The breakdown of respondents by specialties: Non-primary care specialties: Emergency Medicine (10.8%), Neurology (8.5%), General Surgery (7.7%), Neurosurgery (6.9%), Radiology (6.2%), Psychiatry (4.6%), Ob/Gyn (3.1%), and Transitional year (1.5%). Primary care specialties: Family Medicine (8.5%), Internal Medicine (6.2%), Pediatrics (6.2%), and Combined Medicine-Pediatrics (MedPeds) (3.8%).

Context Evaluation

Context evaluation for this study focused on the assessment of whether the curriculum was successful in meeting its stated goals and objectives. The residents in the 12 residency programs at UICOMP provided feedback on the achievement of goals and objectives. The research questions addressed through the context evaluation are as follows:

Overarching research question for context evaluation: What are the perceptions of the medical residents on the Health Disparities Curriculum in achieving its stated goals and objectives?

Research question 1a) Was there a difference among the medical residents based on age, gender, race, medical specialty, and residency year in their perceptions about whether the health curriculum achieved its stated goals and objectives?

To assess the perceptions of the HDC in meeting its stated goals and objectives, the respondents were asked to report their level of agreement on a set of five questions. The responses were based on 5-point Likert scale that ranged from strongly disagree, disagree, neutral, agree and strongly agree. The responses were coded as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1). Table B1 (Appendix B) shows that the residents' agreement ranged from 70% to 93% based on the nature of the question. As seen below in table 4.2, there was a high level of agreement among the respondents that the HDC did meet the stated goals and objectives.

Table 4. 2

Mean and Standard Deviation for the Context Questions

Question	Mean	Standard Deviation
The Health Disparities Curriculum provided education disparities and influencing factors.	4.19	.624
The Health Disparities Curriculum addressed issues in the context of SDOH.	4.23	.564
The Health Disparities Curriculum described the physicians' role as leaders to achieve health equity and social change.	4.12	.693
The Health Disparities Curriculum provided information on local needs and resources and initiatives by hospital systems.	3.98	.726
The Health Disparities Curriculum provided specialty-specific strategic and research directives, and policies.	3.86	.817

The mean scores were in the range of 3.86 to 4.23, indicating a high level of agreement among the respondents and highly positive perceptions. A close examination of the mean values in table 4.2 also shows that although there was a high level of agreement, it differed by the questions. The respondents showed the highest agreement on HDC addressing issues in the context of SDOH (Mean=4.23) while the least agreement was obtained for HDC providing specialty specific research, practice, and policy directives (mean value=3.86).

A principal components analysis (PCA) was performed on these 5 questions keeping the five levels of agreement of the Likert scale intact. Inspection of the correlation matrix showed

that all 5 questions had correlation coefficient greater than 0.3. Bartlett's test of sphericity was statistically significant ($p < .001$), indicating that the data was appropriate for performing principal factor analysis. All the questions loaded onto one factor which we will call component one, accounted for 63.9% of the variance with an eigenvalue greater than 1 (eigenvalue=3.195). To aid interpretability, a Varimax orthogonal rotation was utilized which confirmed a one-factor solution. Component one was labelled as 'Context: Achievement of goals and objectives' The Component loadings and communalities of the solution are presented in Table 4.3 below.

Table 4. 3

Results of Factor Analysis of the Context Component

Questionnaire Items	Factor loading
	Component 1
HDC provided education on disparities and influencing factors	.807
HDC addresses issues in the context of SDOH and at individual, familial, organizational, community and systemic levels	.828
HDC described physicians' role as leaders to achieve health equity and social justice	.776
HDC provided information on local needs, resources, and initiatives by the hospital systems	.796
HDC provided specialty specific research, practice, and policy directives	.788

Note. The overall Kaiser Meyer Olkin (KMO) measure was 0.786 with individual KMO measures all greater than 0.7.

A composite score for the Context component was created by computing the mean response across all five items. The composite context score ranged from 2.80 to 5.00. The most frequent value was +4. An independent sample t-test was utilized to determine if there were significant differences in the composite context score among the respondents by age, gender, race, specialty, number of sessions attended and year in the residency program. The results are shown in table 4.4 below.

Table 4. 4

Independent Samples t-test presenting the Mean and Standard Deviation of the Composite Context Evaluation Score by Selected Demographic Variables

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	4.15 (.57)	.075
31 years and above	3.97 (.52)	
Gender		
Male	4.08 (.61)	.904
Female	4.10 (.49)	
Race		
White	4.07 (.56)	.707
Non-White	4.11 (.55)	
Specialty		
Primary Care	4.08 (.47)	.958
Non-Primary Care	4.06 (.59)	
Residency Year		
1st and 2nd year	4.07 (.52)	.861
3rd-7th year and recent graduates	4.05 (.59)	
No. of sessions attended		
1-10	4.03 (.54)	.204
11-20	4.16 (.57)	

As seen in table 4.4, there was no statistically significant difference in the independent sample t-test for the context evaluation among the respondents by age, gender, race, specialty, residency year and no. of sessions attended. A closer examination of the means showed that the respondents in age group 18-30 years had a higher mean value for the composite context score among all groups, followed by mean values obtained for the non-White respondents, and females. Respondents who attended 11-20 sessions also had higher mean context scores as compared to their counterparts. Higher mean values for these groups indicated a higher agreement among these groups on the achievement of the goals and objectives, thus indicating more favorable perceptions about the curriculum as compared to their counterparts.

In summary, the results of the context evaluation for the health disparities curriculum showed that there was a high level of agreement among the participants that the curriculum met its stated goals and objectives. Among the respondents, agreement was the highest for the objective: curriculum addressed issues in the context of social determinants of health and at individual, familial, organizational, community and policy levels, and the agreement was the lowest for the objective: curriculum provided information on specialty specific research, practice, and policy directives.

As indicated by the results of the independent sample t-test, there were no statistically significant group differences in the mean composite context scores by age, gender, race, specialty, residency year, and no. of sessions attended. These results indicated that the respondents had positive perceptions about the HDC achieving its stated goals and objectives.

Input evaluation

The goal of input evaluation was to identify alternative approaches to improve the health disparities curriculum through the feedback received from the medical residents. The research questions that guided the input evaluation are as follows:

Overarching research question: What inputs were provided by the medical residents to improve the Health Disparities Curriculum?

Research Question 2a) What alternative approaches were suggested by the medical residents?

The respondents were asked 9 open-ended questions to provide their feedback on the didactic sessions, video screenings, population health workshops, if the content was not relevant to them, if the content did not meet their expectations, suggestions for improvement of the content and health disparities curriculum as-a-whole, and the most useful content.

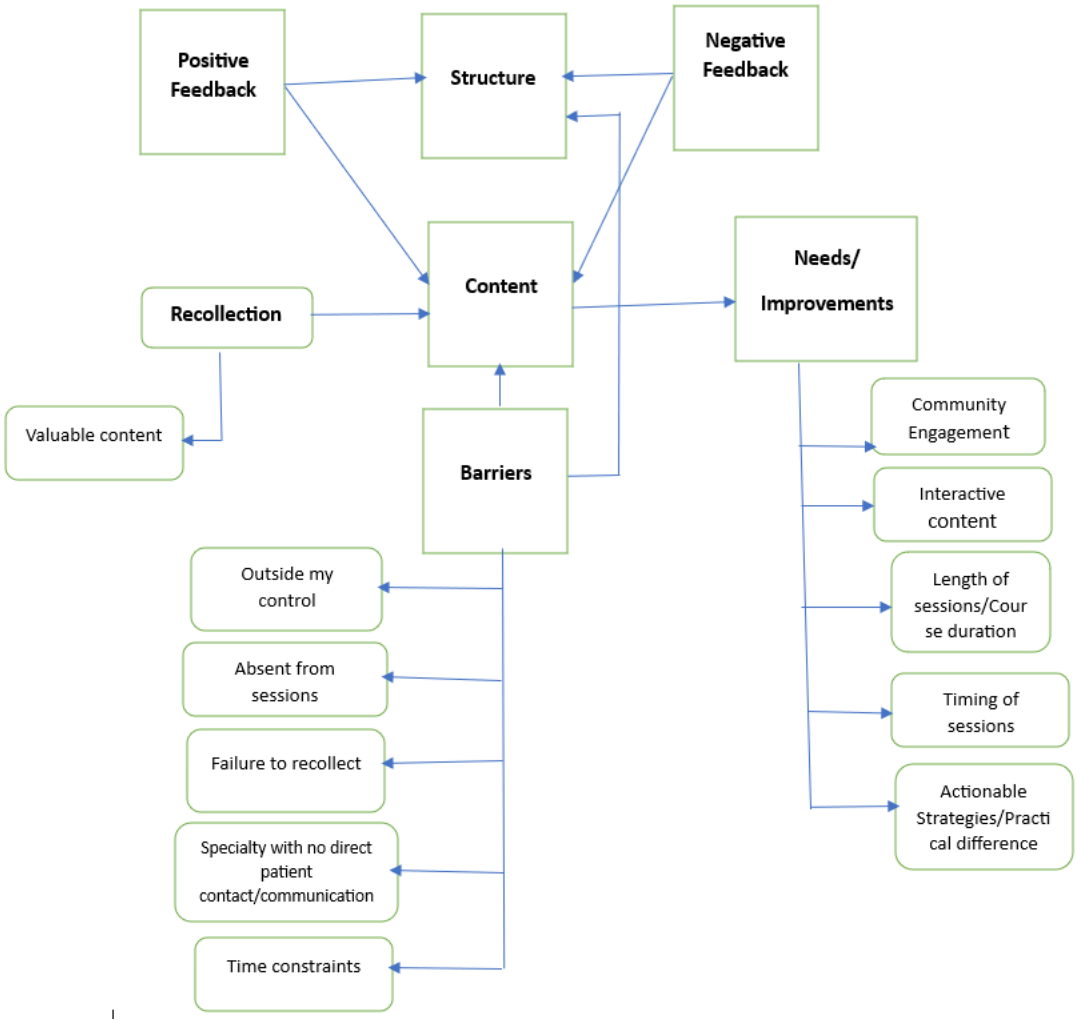
Thematic analysis was utilized for identifying, analyzing, organizing, describing, and reporting themes in the data set. A realist approach was utilized to search for meaning across the whole dataset using primarily semantic themes. This approach was utilized to provide rich description of the entire dataset so that the readers would get a clear sense of the important themes.

Findings from the qualitative analysis

A total of 33 respondents out of 134 (Response rate= 22%) answered the open-ended questions. The research questions were not tied to a specific theory but were focused on receiving the participants' perspectives and alternative approaches on the content and processes involved in the health disparities curriculum. The following thematic map shows the themes and subthemes that emerged from the analysis:

Figure 5

Themes and Subthemes from the Input Evaluation



The description and examples of themes and subthemes

There were five themes that emerged from the qualitative analysis. Table 4.5 Shows the themes and subthemes along with the statements from the participants as examples. The major themes and sub-themes that emerged from the analysis are described below.

Theme 1: Needs expressed /Improvements suggested by the residents to enhance the health disparities curriculum

Many of the participants expressed their needs or shared their suggestions for the health disparities curriculum. These needs/suggestions mainly focused on residents' active engagement to address disparities and can be considered as the potential changes to improve the health disparities curriculum. These needs/suggestions were further divided into the sub-themes that are described below.

Subtheme 1a) Community Engagement: Many of the participants expressed the need to create opportunities for community engagement. Some of the participants suggested multidisciplinary/community collaborations such as involving speakers from diverse backgrounds and local physician leaders to discuss ideas and concepts focused on reducing disparities. Additionally, a few participants suggested exploring opportunities for developing a community project or group visits to community organizations to develop partnerships. Some participants suggested discussing available community resources to achieve larger impact. Some of the participants were able to recall the content discussed in the didactic sessions and they surmised about the actions to address those issues through community engagement.

Subtheme 1b) Actionable strategies/Practical difference: Some of the participants voiced the need for actionable strategies/ opportunities for making practical difference. There were also a few participants who pointed that the didactics in the health disparities served to inform about disparities but lacked actionable strategies that they could use to address the disparities in their practice.

Subtheme 1c) Interactive content: Many participants expressed the need for the content in the health disparities curriculum to be more interactive. The suggestions included the lectures to be

more interactive, having more time for discussion, discussions on more relevant/pressing topics and having more conversations on these issues. Some of the participants also suggested including simulations for effective teaching of the content.

Subtheme 1d) Length of sessions/course duration: Some of the participants expressed the need for the course duration or sessions to be shorter. Some of the participants thought that the course was more appropriate for the residents in the beginning years of the residency programs (1st and 2nd year). Another reason expressed by participants for shorter duration was to make the course less overwhelming. One of the strategies suggested for that was to simplify the number of topics. A few participants stated difficulty to concentrate for long hours as reason to keep the sessions shorter.

Subtheme 1e) Timing: A few participants suggested alternative timing to hold the health disparities curriculum sessions that included protected time for the sessions or holding these sessions during medical residents' school timing instead of lunch hour sessions. The participant hoped that this change would enable more residents to attend these sessions.

Subtheme 1f) Specialty-specific content: Some of the participants expressed the need for the didactics of the health disparities curriculum to be geared more towards individual specialty or provision of resources that were specific to their specialty.

In the next theme that emerged, the medical residents discussed their feedback on the health disparities curriculum. The feedback was focused either on the content or on the structure of the health disparities curriculum. The feedback on content included medical residents' thoughts on the didactic sessions, video screenings, and population health workshops, while the feedback on structure included their thoughts on the group-setting, discussion time/session time, and mode of delivery.

Theme 2: Positive feedback on the content, structure, and delivery of the health disparities curriculum

Most of the participants provided a positive review of the health disparities content and structure. These responses were short, mostly one to two liners that stated the attributes liked by the participants. Many of the participants stated that the didactic sessions were informative, thought provoking, comprehensive, enlightening, and engaging. Some participants stated that they liked videos or found videos interesting or helpful. A few participants stated that they liked information summarized in tables while a few participants recalled participating in specific population health workshop and actively discussing the problem and solutions to the issue at hand. Regarding structure, most of the participants liked small groups setting better and in-person delivery than virtual, although the participants appreciated having the virtual option due to the ease of attending the sessions during their busy schedule. A few participants also appreciated the brevity and conciseness of the sessions.

Theme 3: Negative feedback on the content, structure, and delivery of the health disparities curriculum

Fewer participants provided negative feedback that included their thoughts on the content and structure of the Health Disparities Curriculum. The participants thought that the content was dense or overwhelming. A few participants stated that the content was not something new/or they had not heard before. A few participants thought that the information was exhausted over the years. Regarding negative feedback on structure, the participants mainly focused on the mode of delivery with many expressing that the virtual sessions were not as effective as in-person sessions. A few participants stated that they found it difficult to discuss the ‘heavy hitting’ or in other words, difficult or serious topics virtually.

Theme 4: Barriers expressed by the residents to participating in the curriculum and in addressing disparities

Many of the participants described the barriers that included time challenges in attending the health disparities sessions, inability to recollect specific content taught, difficulty in relating to disparities as their specialty lacked direct patient contact and perhaps, most importantly, medical residents' perceptions/attitude towards their role in addressing disparities. The prominent subthemes that emerged are described below.

Subtheme 4a) Outside my control: The medical residents agreed that health disparities and health care disparities were important issues, that they were multifactorial, and affected certain populations disproportionately but most of the participants stated that because these issues were systemic or societal, it was not possible for them to make an individual impact, it was too big of a task. Resonating the same attitude, another participant stated that a larger impact would be achieved by community resources available to the affected populations. Although the participant agreed that medical provider was important in population health but further added that a provider couldn't change genetic-socioeconomic-cultural-behavioral-emotional factors affecting individual's health in limited interactions with patients. Other participant pointed at larger factors outside their control including their patient's motivations. Another participant displayed the same attitude that they can't change these issues and further stated that they shouldn't feel guilty for not being a racial minority in the United States.

Subtheme 4b) Time constraints: The medical residents stated time constraints as barriers with respect to their attendance and review of learning materials. The residents stated competing demands on time as a reason for not being able to attend on time or review the contents. Given that there was limited time availability and resulting conflict to fit all education curricula (non-

clinical/clinical) within the limited didactic time, it was suggested to condense the HDC into fewer lectures. Aligning with the same sentiment, a participant admired the brevity and conciseness of the HDC sessions as it allowed them to attend during their busy day.

Theme 5: Recollection of specific content(s) from the curriculum that the residents expressed as valuable

Lastly, the participants described the content that they believed was valuable. The participants appreciated learning about implicit bias, microaggressions, self-reflection, and communication strategies. Some participants vividly remembered specific content, or session that they liked, and a few participants remembered some part and not whole content, for example, a participant couldn't recall that systemic factors influence disparities and resorted to saying, "…appreciated learning about the systemic thing in place that perpetuate health disparities". Table 4.5 below shows the themes, sub-themes that emerged in this thematic analysis, and corresponding examples.

Table 4. 5

Description of Themes and Subthemes from the Input Evaluation

Theme/Subtheme	Example(s)
Theme 1: Needs expressed/improvements suggested by the residents to enhance the health disparities curriculum	
1a) Subtheme: Community engagement	"It would be helpful if there were more practical sessions such as going out as a group to visit a local organization that we could partner with." "I think the most valuable takeaways to focus on would be uncovering implicit biases (which was covered) and what actions to take to fix the problems we are facing. maybe a community project or something?"

1b) Subtheme: Actionable strategies/Practical difference	"I think continuing try to focus more on how we can make a practical difference to address some of these unique challenges as resident physicians would be beneficial" "The lectures inform but do not fix the issues. The only logical answer is 'no', they do not provide strategies to improve the issues in your practice"
1c) Subtheme: Interactive content	"..would be helpful to have a sim where we would have a specific scenario addressing this with simulated people similar to osces."
1d) Length of sessions/Course duration	"…..Was sometimes difficult to concentrate for long periods of time in a lecture." "I think the course is helpful as a PGY1-2, but PGY3-5 seemed more of the same material and concepts." "I think simplifying the number of topics would make it easier+ less overwhelming."
1e) Timing	"…would be able to have more residents participate if there was dedicated protected time for the curriculum. May be during school rather than lunch meetings."
1f) Specialty-specific content/resources	"I wish didactic sessions were more ground toward our specialty"
Theme 2: Positive feedback on the content, structure, and delivery of the health disparities curriculum	
Subtheme 2a) Positive feedback on content	"I really enjoyed the Flint water crisis case study which gave us an opportunity to identify the problem and provide our solutions and then discuss the realistic aspects of our solution and whether they were truly achievable"
Subtheme 2b) Positive feedback on structure	"I liked the structure of the workshop having us break into different groups and discuss an issue and then share with the group."
Theme 3: Negative feedback on the content, structure, and delivery of the health disparities curriculum	

Subtheme 3a) Negative feedback on content	"Nothing new/nothing that I haven't heard." "I feel that information was exhausted over the years".
Subtheme 3b) Negative feedback on structure	"It's really hard to really talk about the heavy header topics over zoom" "Virtual presentations were not as effective as in person would have been."
Theme 4: Barriers expressed by the residents to participating in the curriculum and in addressing disparities	
Subtheme 4a) Outside my control	"agree with the fact that the world is not fair and that certain health conditions tend to affect certain populations of people more than others---but It's not possible for me to affect the geopolitical and social patterns of the world. It's just too big of a task. And I shouldn't feel guilty for not being a racial minority in this country." "The role of the medical provider is important in population health yes--but perhaps a larger impact is achieved by community resources available to those being discussed. I just treat all of my patients with the same attitude in terms of their health and cater differences based on their emotion and relational style, but in one sense these presentations are not relevant to me because I cannot change genetics, income, living situation, childhood environments, or patient lifestyle much. And those are the factors that have the vast majority of control over illness, not my limited interaction with them."
Subtheme 4b) Time Constraints	"I appreciate the brevity and conciseness of each session for the curriculum which helps us actually attend the lectures/workshops in our busy day." "…however would be nice if it could be condensed into fewer lectures. We have such limited didactic time to incorporate other clinical lectures as well." "Hard to take the time to watch when there are so many other duties we need to fulfill as residents."
Theme 5: Recollection of the specific content from the curriculum that the residents expressed as valuable	
Subtheme 5a) Valuable content	"Microaggressions would be relevant for me-I have witnessed/experienced these."

	"I think learning the different types of microaggressions."

Process Evaluation

The process evaluation consisted of the evaluation of the teaching and learning processes for the health disparities curriculum. The teaching and learning processes include the didactic sessions, video screening sessions and the population health workshops, the instructor, the review of the learning resources shared with the respondents and the attendance of the participants. The research questions addressing the process evaluation are as follows:

Overarching research question for process evaluation: What were the differences among the medical residents on their perception of the teaching and learning processes of the health disparities curriculum?

Research question 3a) Was there a difference by selected demographic variables age, gender, year in residency program, and specialty in the number of sessions attended?

Research question 3b) Was there a difference among the medical residents in their perceptions of the teaching and learning processes of the health disparities curriculum?

- **3b1)** Was there a difference among the medical residents in their perceptions about the relevance of the curriculum content?
- **3b2)** Was there a difference among the medical residents in perceptions of the instructor's competence?
- **Research question 3C)** Was there a difference among the medical residents in the review of materials ?

The respondents were asked to indicate the number of didactic sessions, video screening sessions and population health workshops they attended per academic year. Four didactic sessions were delivered to each residency program per year, thus, a total of 12 didactic sessions from the academic year 2019-20 to 2021-22. A mean of 6.35 didactic sessions were attended, with 10% of the residents attending a minimum of one session and 21.5% attending all didactic sessions. Each year, two video screenings were held, so, a total of 6 video sessions were conducted from academic year 2019-20 to 2021-22, with a mean of 2.09 that were attended. About 14.6% of residents attended all the video screenings. A total of two population health workshops were conducted and about 25.4% of the residents attended both. Out of a total of 20 sessions conducted, a mean of 9.15 sessions were attended, with 11.5% of residents attending all sessions.

Research question 3a) Was there a difference by selected demographic variables age, gender, year in residency program, and specialty in the number of sessions attended?

To determine if there were significant differences in the attendance among the medical residents, a chi-square test of proportions was employed. The dichotomous variable ‘total sessions attended’- with associated categories of 1-10 sessions attended and 11-20 sessions attended was utilized for the analysis. This dichotomous variable was used in the cross-tabulations conducted to analyze if there was any correlation between the number of sessions attended and age, gender, race, residency year and specialty. The results of the chi-square test are presented in table 4.6 below.

Table 4. 6

Results of the Chi-Square Test of Homogeneity Comparing Number of Sessions attended by Demographic Variables

Grouping variable	No. of sessions attended				P-value
	1-10 sessions		11-20 sessions		
	N	%	N	%	
Age					
18-30 years	47	59.5	30	63.8	.629
31 years and above	32	40.5	17	36.2	
Gender					
Male	43	56.6	28	65.1	.438
Female	33	43.4	15	34.9	
Race					
White	39	54.2	31	73.8	.004
Non-White	33	45.8	11	26.2	
Specialty					
Primary Care	28	48.3	4	10.5	<.001
Non-Primary Care	30	51.7	34	89.5	
Year in residency					
1^{st}-2^{nd} year	52	66.7	9	21.4	<.001
3^{rd}-7^{th} year and recent graduates	26	33.3	33	78.6	

Table 4.6 presents the results for the chi-square test of proportions for the total number of sessions attended by age, gender, race, specialty, and year of residency of the residents. There was statistically significant difference in the proportion of the residents attending the sessions by race (($\chi^2(1) = 4.319$, $p = .004$), specialty ($\chi^2(1) = 14.722$, $p < .001$) and year of residency ($\chi^2(1) = 22.354$, $p < .001$).

Research question 3b) Was there a difference among the medical residents in their perceptions of the teaching and learning processes of the health disparities curriculum?

The teaching and learning processes of the health disparities curriculum involved the sessions conducted, the instructor, and learning resources shared with the respondents. To analyze the perceptions on teaching and learning processes, the respondents were asked questions on the relevance of the sessions and on the instructor's competence.

Research Question 3b1) Was there a difference among the medical residents in their perceptions about the relevance of the curriculum content?

To assess the residents' perceptions on the relevance of the sessions, the respondents were asked to report their level of agreement on a set of 3 questions. The responses were based on 5-point Likert scale that ranged from strongly disagree, disagree, neutral, agree and strongly agree. The results in table B2 (See appendix B) show that more than 70% of respondents agreed that the didactic sessions and population health workshops were relevant to them and about 62% of the residents reported the video screenings as relevant. Table 4.7 below shows the means and standard deviation for the three questions on relevance.

Table 4. 7

Mean and Standard Deviation for the Content Relevance Questions

Question	Mean	Standard Deviation
The content in the didactic sessions were relevant to me as a physician	3.96	.703
The population health workshops were relevant to me as a physician	3.94	.652
The video screening sessions were relevant to me as a physician	3.83	.692

As the mean values indicate, most respondents indicated a high level of agreement on the relevance of didactic sessions and population health workshops as compared to the relevance of the video screening sessions.

Keeping the five levels of agreement of the Likert scale intact, a principal components analysis (PCA) was performed on these 3 questions. Bartlett's test of sphericity was statistically significant ($p < .001$) indicating that the data was suitable for principal component analysis. All the questions loaded strongly onto component one which we will call ‘Content Relevance’, accounted for 75.93% of the variance with an eigenvalue of 2.278. To aid interpretability, a Varimax orthogonal rotation was utilized which confirmed a one-factor solution. The Component loadings and communalities of the solution are presented in Table 4.8 below.

Table 4. 8

Results of Factor Analysis of the Content Relevance Questions

Questionnaire Items	Factor loading
	Component 1
The content in the didactic sessions were relevant to me as a physician	.710
The population health workshops were relevant to me as a physician	.829
The video screening sessions were relevant to me as a physician	.740

Note. The Kaiser-Meyer-Olkin measure of sampling adequacy was .697 and the KMO measures for individual variables were greater than 0.5.

Cronbach's alpha for these 3 questions was .840

A composite score for the content relevance was created by computing the mean response across the three questions. The composite content relevance score ranged from +2.00 to +5.00. The most frequent value was +4.00. An independent sample t-test was utilized to determine if there were significant differences in the composite content relevance score among the respondents by age, gender, race, specialty, number of sessions attended and year in the residency program. The results are shown in table 4.9 below.

Table 4. 9

Independent Samples t-test Presenting the Mean and Standard Deviation of the Content Relevance Score by Selected Demographic Variables

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	3.89 (.65)	.803
31 years and above	3.92 (.56)	
Gender		.881
Male	3.90 (.59)	
Female	3.92 (.62)	
Race		
White	3.84 (.58)	.228
Non-White	3.98 (.63)	
Specialty		
Primary Care	3.96 (.54)	.669
Non-Primary Care	3.90 (.63)	
Residency Year		
1st and 2nd year	3.88 (.57)	.478
3rd-7th year and recent graduates	3.95 (.65)	
Total sessions attended		
1-10	3.89 (.56)	.646
11-20	3.94 (.71)	

As seen in table 4.9, there were no statistically significant differences in the means of the content relevance score among the respondents. A closer examination of the means indicates that respondents who were non-White, belonged to primary care specialties, those in 3rd-7th year of residency including recent graduates and those who attended 11-20 sessions had a higher mean

score for the content relevance. A higher mean score indicates more favorable perceptions on the relevance of the content.

Research question 3b2) Was there a difference among the medical residents in perceptions of the instructor's competence?

The participants were asked to provide feedback on the instructor's competence in delivering the health disparities curriculum through a set of four questions. The responses were on a 5-point Likert scale ranging from strongly disagree to strongly agree. The results in table B3 (Appendix B) show that there was no disagreement reported on instructors' knowledge about the subject area. For all the questions, the respondents reported a very percentage of agreement ranging between 88.5% to 91.5%. The responses were codes from 1 to 5 for strongly disagree to strongly agree. Table 4.10 below shows the means and standard deviation for the set of four questions on the instructor's competence.

Table 4. 10

Mean and Standard Deviation for the Instructor's Competence Questions

Question	Mean	Standard Deviation
Instructor was knowledgeable	4.32	.59
Instructor delivered the material in organized and structured manner	4.24	.68
Instructor answered questions effectively	4.23	.61
Instructor was approachable and willing to help	4.37	.65

As seen in the table above, the mean values ranged from 4.23 to 4.37, indicating a high level of agreement and highly positive perceptions about the instructor among the respondents.

A principal components analysis (PCA) was performed on this set of 4 questions with the five levels of agreement of the Likert scale. Bartlett's test of sphericity was statistically significant ($p < .001$) indicating that the data was suitable for principal component analysis. All the questions loaded strongly onto component one labelled as 'Instructor perceptions', accounted for 82.30% of the variance with an eigenvalue of 3.292. A one-factor solution was confirmed by varimax orthogonal rotation. The Component loadings and communalities of the solution are presented in Table 4.11 below.

Table 4. 11

Results of Factor Analysis of the Perceptions on Instructor's Competence

Questionnaire Items	Factor loading
	Component 1
Instructor was knowledgeable	.901
Instructor delivered the material in organized and structured manner	.914
Instructor answered questions effectively	.930
Instructor was approachable and willing to help	.883

Note. The Kaiser-Meyer-Olkin measure of sampling adequacy was .856 and the KMO measures for individual variables were greater than 0.8.
Cronbach's alpha for these 3 questions was .927

A composite score for the instructor's competence was created by computing the mean response across the four questions. The composite instructor perceptions score ranged from +2.50 to +5.00. The most frequent value was +4.00. An independent sample t-test was performed

to determine if there were significant differences in the composite content relevance score among the respondents by age, gender, race, specialty, number of sessions attended and year in the residency program. The results are shown in table 4.12 below.

Table 4. 12

Independent samples t-test presenting the Mean and Standard Deviation of the Composite Instructor Competence Score by Selected Demographic Variables

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	4.34 (.60)	.152
31 years and above	4.18 (.53)	
Gender		
Male	4.28 (.61)	.899
Female	4.29 (.48)	
Race		
White	4.28 (.54)	.752
Non-White	4.31 (.56)	
Specialty		
Primary Care	4.28 (.48)	.928
Non-Primary Care	4.29 (.61)	
Residency Year		
1st and 2nd year	4.21 (.60)	.228
3rd-7th year and recent graduates	4.34 (.55)	
Total sessions attended		
1-10	4.22 (.55)	.102
11-20	4.40 (.61)	

As seen in table 4.12, there was no significant difference in the means of the composite score on instructor' competence perceptions among the respondents.

Research question 3C) Was there a difference among the medical residents on whether they reviewed the learning resources from the course materials by selected demographic variables age, gender, race, year in residency program, number of sessions attended, and specialty?

The respondents were asked to report if they reviewed the learning resources shared with them. The responses were based on 5-point Likert scale that ranged from strongly disagree, disagree, neutral, agree and strongly agree. The responses were coded as 1 for strongly disagree to 5 for strongly agree. The results in table B4 (Appendix B) show that less than half of the respondents reported reviewing the materials (45.4%) and relatively larger proportion of respondents reported disagreement to reviewing materials (29.2%).

To determine if there were statistically significant group differences among the respondents in the review of learning materials, an independent t-test was performed. The results are shown in table 4.13 below.

Table 4. 13

Independent Samples t-test presenting the Mean and Standard Deviation of the Review of Learning Materials

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	3.23 (1.15)	.990
31 years and above	3.23 (1.03)	
Gender		
Male	3.29 (1.14)	.443
Female	3.13 (1.07)	
Race		
White	3.25 (1.10)	.639
Non-White	3.14 (1.16)	

Specialty Primary Care	2.81 (.95)	.018
Non-Primary Care	3.37 (1.11)	
Residency Year 1st and 2nd year	3.33 (1.08)	.538
3rd-7th year and recent graduates	3.21 (1.06)	
Total sessions attended 1-10	3.16 (1.06)	.333
11-20	3.36 (1.15)	

As seen in table 4.13, there was a statistically significant difference among the medical residents in the review of materials by area of specialty. Respondents from the non-primary care specialties reviewed the learning materials statistically significantly more than the respondents from the primary care specialties.

Summary of Process evaluation results: The results of the process evaluation showed that there was statistically significant difference in the attendance of lectures by race, specialty, and year of residency. There was no statistically significant difference in the perceptions about the relevance of content, although the respondents who were non-White, belonged to primary care specialties, were in senior years of the residency program/recent graduates and those who attended 11-20 sessions had more favorable perceptions on the content relevance.

There were no statistically significant differences in the perceptions about the instructor's competence among the residents by age, gender, race, specialty, year of residency, and total sessions attended. The results also showed that the respondents in the younger age group,

residents in senior years of the residency/recent graduates, and the respondents who attended 11-20 sessions had more favorable perceptions about the instructor.

There was a statistically significant difference among the respondents in the review of learning materials by specialty, where the respondents from the non-primary care specialty reviewed the learning materials more as compared to the respondents from the primary care specialties.

Product Evaluation

The goal of product evaluation was to assess the outcomes of the health disparities curriculum on the specific characteristics of the medical residents. To assess the outcomes of participating in the health disparities curriculum on medical residents, respondents' perceived self-efficacy, awareness, attitude towards cultural humility, engagement on disparities, and perceptions on the utility of the curriculum were evaluated. The following research questions addressed these outcomes:

Overarching research question: What were the participant outcomes after taking the health disparities curriculum?

Research question 4a) Was there any difference among the medical residents in perceived self-efficacy in identifying and addressing health disparities and health care disparities before and after implementation of the curriculum?

Research question 4b) Was there any difference among medical residents in awareness of the factors influencing disparities?

Research question 4c) Was there any difference among medical residents in attitude towards cultural humility?

Research question 4d) Was there any difference among the medical residents in engagement on disparities in terms of discussions, scholarly activity, and community partnerships?

Research question 4e) Was there any difference in perceptions among medical residents on the utility of the health disparities curriculum?

To determine if there was any difference in self-efficacy among the medical residents before and after implementation of the health disparities curriculum, the respondents were asked to rate their confidence in their ability to identify and address disparities on a scale of 1 to 5, with 1 being not confident at all and 5 being extremely confident, on a set of 5 questions. The means and standard deviation for each of the before and after questions is presented in table 4.14 below.

Research Question 4a) Was there any difference among the medical residents in perceived self-efficacy in identifying and addressing health disparities and health care disparities before and after implementation of the curriculum?

Table 4. 14

The Mean and Standard Deviation for Before and After Questions to assess Self-efficacy in Identifying and Addressing Disparities

Item	Curriculum implementation	M	SD
Identify the historical, social, and political context of health and health care disparities	Before	2.72	1.033
	After	3.74	.727
Identify the relationship between race, ethnicity, SES, inequality, and disparities	Before	2.93	1.031
	After	3.91	.793

Identify specialty specific policies, and strategies to address disparities	Before	2.54	1.118
	After	3.57	.935
Identify individual, interpersonal, organizational, community and systemic factors influencing disparities	Before	2.75	.997
	After	3.70	.826
Identify and address health and healthcare disparities within populations served by you/ your practice	Before	2.64	1.037

As seen in the table above, the mean for each of the 'after' question is higher than the associated before question, indicating a gain in self-efficacy among the respondents.

A principal components analysis (PCA) was performed on this set of 5 questions assessing self-efficacy before and after the implementation of the curriculum. Bartlett's test of sphericity was statistically significant ($p < .001$) indicating that the data was suitable for principal component analysis. All the before questions loaded strongly onto component one labelled as 'Self-efficacy before.' This single component accounted for 82.09% of the variance with an eigenvalue of 4.105. A one-factor solution was confirmed by varimax orthogonal rotation. Similarly, all the after questions loaded onto a single component labelled as 'Self-efficacy after' which explained 80% of the variance with an eigenvalue of 4.009. The Component loadings and communalities of the solution for before and after self-efficacy are presented in Table 4.15 below.

Table 4. 15

Results of Factor Analysis of Self-Efficacy

Questionnaire Items	Factor loading Self-efficacy Before	Factor Loading Self-efficacy After
	Component 1	Component 1
Identify the historical, social, and political context of health and health care disparities	.906	.898
Identify the relationship between race, ethnicity, SES, inequality, and disparities	.892	.861
Identify specialty specific policies, and strategies to address disparities	.874	.880
Identify individual, interpersonal, organizational, community and systemic factors influencing disparities	.931	.934
Identify and address health and healthcare disparities within populations served by you/ your practice	.926	.902

Note. Self-efficacy before: The Kaiser-Meyer-Olkin measure of sampling adequacy was .888 and the KMO measures for individual variables were greater than 0.8.

Self-efficacy after: The Kaiser-Meyer-Olkin measure of sampling adequacy was .877 and the KMO measures for individual variables were greater than 0.8.

Cronbach's alpha was .930

A composite before and after self-efficacy scores were created by computing the mean response across the five questions. A paired sample t-test was conducted to analyze if there was a statistically significant difference in self-efficacy before and after implementation of the health disparities curriculum. The results are displayed in the table below.

Table 4. 16

Mean and Standard Deviation for the Composite Self-Efficacy Scores

Composite score	Mean	SD	p-value
Before curriculum implementation	2.72	.945	<.001
After curriculum implementation	3.71	.744	

As seen in table 4.16, the self- efficacy in identifying and addressing disparities increased after implementation of the health disparities curriculum among the respondents. This increase in self-efficacy was statistically significant ($t(102) = -12.121$, $p<.001$).

Research question 4b) Was there any difference among medical residents in awareness of the factors influencing disparities?

The participants were asked if the HDC increased their awareness on implicit bias, cultural competency/humility, social determinants of equity, structural/systemic racism, social determinants of health and physician-patient perceptions and systemic factors affecting quality of care. The responses were based on 5-point Likert scale that ranged from strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). Table B5 (Appendix B) shows that the respondents' agreement ranged from 72% to 78%. Table 4.17 below shows the means and standard deviation for the awareness questions.

Table 4. 17

Means and Standard Deviation for the Awareness Questions

Question	Mean	Standard Deviation
HCD made me more aware about my implicit biases	3.90	.794
HCD made me more aware about cultural competency/cultural humility as an effective way to reduce disparities	4.01	.671
HCD made me more aware about the social determinants of equity including systemic and structural racism as the forces that create the social determinants of health as factors responsible for perpetuation of health and health care disparities	4.01	.647
HCD made me more aware about patient perceptions, physician perceptions and systemic factors that affect quality of care.	4.04	.670

As seen in the table 4.17 above, the mean ranged from 3.90 to 4.04 indicating a high agreement among the respondents that the HDC raised their awareness, with a higher agreement among the residents on HCD making them more aware of the perceptions and systemic factors that affect the quality of care. The agreement was comparatively lower for HCD raising awareness on implicit bias.

A principal components analysis (PCA) was performed on these 4 questions. Bartlett's test of sphericity was statistically significant ($p < .001$). This indicated that the data was suitable for principal component analysis. All the questions loaded strongly onto one component, this component labelled as ‘Awareness’, accounted for 82.25% of the variance with an eigenvalue of 3.290. A Varimax orthogonal rotation was utilized to aid in interpretability which led to

extraction of only one component. The Component loadings and communalities of the solution are presented in Table 4.18 below.

Table 4. 18

Results of Principal Component Analysis of the Awareness Questions

Questionnaire Items	Factor loading
	Component 1
HCD made me more aware about my implicit biases.	.882
HCD made me more aware about cultural competency/cultural humility as an effective way to reduce disparities.	.929
HCD made me more aware about the social determinants of equity including systemic and structural racism as the forces that create the social determinants of health as factors responsible for perpetuation of health and health care disparities.	.918
HCD made me more aware about patient perceptions, physician perceptions and systemic factors that affect quality of care.	.897

Note. The Kaiser-Meyer-Olkin measure of sampling adequacy was .849 and the KMO measures for individual variables were greater than 0.8.
Cronbach's alpha for these 4 questions was .924

A composite awareness score was computed by averaging the responses across the four questions. The composite awareness score ranged from +2.00 to +5.00. The most frequent value was +4.00. An independent sample t-test was conducted to determine if there were significant differences in the composite awareness score among the respondents by age, gender, race, specialty, number of sessions attended and year in the residency program. The results are shown in table 4.19 below.

Table 4. 19

Independent Samples t-test presenting the Mean and Standard Deviation of the Composite Awareness Score by Selected Demographic Variables

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	4.05 (.669)	.217
31 years and above	3.90 (.560)	
Gender		
Male	3.99 (.638)	.901
Female	3.97 (.576)	
Race		
White	3.96 (.617)	.697
Non-White	4.01 (.592)	
Specialty		
Primary Care	4.12 (.515)	.120
Non-Primary Care	3.90 (.689)	
Residency Year		
1st and 2nd year	3.96 (.616)	.915
3rd-7th year and recent graduates	3.98 (.652)	
Total sessions attended		
1-10	3.95 (.589)	.305
11-20	4.07 (.697)	

As seen in table 4.19, there was no statistically significant difference in means of the composite awareness score by age, gender, race, specialty, year of residency and total number of sessions attended.

Research question 4c) Was there any difference among medical residents in attitude towards cultural humility?

The respondents were asked if they were more inclined to incorporate cultural humility skills in their daily clinical encounters. The responses were based on 5-point Likert scale that ranged from strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). Table B6 (Appendix B) shows that about 77% of medical residents reported agreement that they were more inclined to incorporate cultural humility skills in their daily clinical encounters due to the health disparities curriculum.

Keeping the five levels of agreement of the Likert scale intact, an independent t-sample test was performed to assess if there was any difference in inclination to incorporate the cultural humility skills among the medical residents by age, gender, race, specialty, year in the residency program, and number of HCD sessions attended. The results are shown in table 4.20 below.

Table 4. 20

Independent Samples t-test presenting the Mean and Standard Deviation for Inclination to incorporate Cultural Humility in Daily Clinical Encounters among Medical Residents

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	4.08 (.707)	.096
31 years and above	3.87 (.612)	
Gender		
Male	3.99 (.663)	.906
Female	4.00 (.640)	
Race		
White	3.96 (.661)	.589
Non-White	4.02 (.612)	
Specialty		
Primary Care	4.13 (.571)	.164
Non-Primary Care	3.92 (.737)	

Residency Year 1st and 2nd year	4.00 (.681)	.782
3rd-7th year and recent graduates	3.96 (.687)	
Total sessions attended 1-10	3.97 (.660)	.461
11-20	4.07 (.695)	

There were no statistically significant differences among the medical residents in their inclination to incorporate cultural humility skills.

Research question 4d) Was there any difference among the medical residents in engagement in discussions, scholarly activity, and community partnerships related to health disparities?

To assess the medical residents' engagement in a variety of health disparities focused activities, they were asked a set of five questions. A positive response (checked option) was given a score of 2, and a negative response (unchecked option) received a score of 1. Table B7 (Appendix B) shows that 63% of medical residents reported that they were having more discussions with their faculty and peers on health disparities and social determinants of health. Table 4.21 below shows the means and standard deviation for the engagement questions.

Table 4. 21

Means and Standard Deviation for the Medical Residents' Engagement in Health Disparities Focused Activities

Question	Mean	Standard Deviation
Having more discussions on disparities, SDOH with faculty and peers	1.75	.435

Focusing on disparities, SDOH during case discussions	1.39	.490
Developed/thinking to develop scholarly activity focused on disparities	1.27	.447
Have volunteered/would be volunteering at a community organization	1.20	.408
Have collaborated/would be collaborating with a community organization to address a health issue	1.20	.408

As seen from the table above, the mean engagements scores ranged from 1.20 to 1.75. The mean score for discussions with faculty and peers on disparities was higher as compared to the mean score for the case-based discussions, indicating medical residents' increased engagement with faculty and peers on these topics. The medical residents had a lower mean score on scholarly activity development focused on disparities, indicating lower engagement. The medical residents also had a low mean score on community engagement through volunteering and/or collaboration with community organizations.

Given the categorical, binary nature of these variables, a principal component analysis was not performed. A composite disparities discussions score was calculated by averaging the scores for the variables: 'discussion with faculty and peers' and 'case-based discussions.' A composite community partnership score was calculated by averaging the scores for the variables: 'volunteering with community organizations' and 'collaborations with community organizations to address an issue.' For scholarly activity development, a single variable score was utilized. These scores were then used to analyze if there were any differences in engagement among the medical residents by age, gender, race, specialty, year in residency program, and total sessions attended. Table 4.22 below shows the significant results for the independent samples t-test to identify any differences among the residents in the composite disparities discussions score.

Table 4. 22

Independent Samples t-test presenting the Mean and Standard Deviation for Medical Residents' Engagement in Disparities Discussions

Group	Composite Score Mean (SD)	p-value
Specialty		
Primary Care	1.67 (.334)	.033
Non-Primary Care	1.49 (.378)	

As seen in the table above, there was a statistically significant difference in the means of disparities discussions score between the respondents from the primary care specialties and the respondents from the non-primary care specialties. The table 4.23 below shows the significant results for the independent sample t-test to identify any differences in the community partnerships score among the medical residents.

Table 4. 23

Independent Samples t-test presenting the Mean and Standard Deviation for Community Partnerships Score among the Medical Residents

Group	Composite Score Mean (SD)	p-value
Gender		
Male	1.12 (.250)	.011
Female	1.30 (.401)	
Specialty		
Primary Care	1.32 (.406)	.041
Non-Primary Care	1.16 (.305)	

The results in the table above show that the mean score for community partnership were higher and statistically significant for the female respondents and for respondents from the primary care specialties indicating higher community engagement as compared to the male residents and residents in the non-primary care specialties.

When an independent sample t-test was performed to analyze the difference in scholarly activity development, no statistically significant results were obtained. A closer examination of means showed that the mean of disparities focused scholarly activity development was higher for residents aged 31 years (M=1.30, SD=.461) as compared to the younger residents (M=1.24, SD= .434). The female residents (M=1.29, SD=.460) and primary care residents (M=1.31, SD= .470) were more engaged in developing disparities focused scholarly activity as compared to the male residents (M=1.24, SD=.431), and non-primary care residents (M=1.24, SD=.428).

Research question 4e) Was there any difference in perceptions among medical residents on the utility of the health disparities curriculum?

The utility of the curriculum was analyzed on a set of 4 questions that focused on perceptions of the respondents on satisfaction, usefulness, curriculum meeting expectation and whether the respondents rated the HDC as an excellent source of information. The responses were based on 5-point Likert scale that ranged from strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). The frequency analysis for the utility questions is presented in table B8 (Appendix B) shows that the percentage of agreement varied from 70% to 77%. Table 4.24 below shows the means and standard deviation for the utility questions.

Table 4. 24

Means and Standard Deviation for The Utility Questions

Question	Mean	Standard Deviation
The content of the health disparities curriculum met my expectations	3.88	.738
Overall, I would rate the health disparities curriculum as an excellent source of information	3.99	.720
Overall, I think the content of the health disparities curriculum was useful to me as a physician in addressing health and health care disparities	3.91	.701
Overall, I am satisfied with the quality of didactic sessions, screenings, and population health workshops within the health disparities curriculum	3.96	.682

The results in table 4.24 indicate that among the utility questions, a higher mean was obtained for HCD as excellent source of information, meaning a higher number of the respondents perceived the curriculum favorably, while a lower mean on curriculum meeting expectations indicates that a HDC met expectations of a lower number of respondents.

A principal components analysis (PCA) was performed on this set of 4 questions. Bartlett's test of sphericity was statistically significant ($p < .001$) indicating that the data was suitable for principal component analysis. All the questions loaded strongly onto one component which was labelled as 'Utility.' This single component accounted for 79.48% of the variance with an eigenvalue of 3.179. A one-factor solution was confirmed by varimax orthogonal rotation. The Component loadings and communalities of the solution are presented in Table 4.25 below.

Table 4. 25

Results of Principal Component Analysis of the Utility Questions

Questionnaire Items	Factor loading
	Component 1
The content of the health disparities curriculum met my expectations	.862
Overall, I would rate the health disparities curriculum as an excellent source of information	.913
Overall, I am satisfied with the quality of didactic sessions, screenings, and population health workshops within the health disparities curriculum	.897
Overall, I think the content of the health disparities curriculum was useful to me as a physician in addressing health and health care disparities	.912

Note. The Kaiser-Meyer-Olkin measure of sampling adequacy was .830 and the KMO measures for individual variables were greater than 0.8.
Cronbach's alpha for these 4 questions was .913

By computing the mean response across the four questions, a 'composite utility' score was created. The composite awareness score ranged from 2.00 to 5.00. The most frequent value was 4.00. An independent sample t-test was performed to determine if there were significant differences in the composite utility score among the respondents by age, gender, race, specialty, number of sessions attended and year in the residency program. The results are shown in table 4.26 below.

Table 4. 26

Independent Samples t-test presenting the Mean and Standard Deviation of the Composite Utility Score by Selected Demographic Variables

Group	Composite Score Mean (SD)	p-value
Age		
18-30 years	3.98 (.679)	.222
31 years and above	3.84 (.536)	
Gender		
Male	3.95 (.638)	.895
Female	3.93 (.595)	
Race		
White	3.89 (.650)	.417
Non-White	3.99 (.548)	
Specialty		
Primary Care	3.98 (.542)	.544
Non-Primary Care	3.90 (.672)	
Residency Year		
1st and 2nd year	3.90 (.636)	.598
3rd-7th year and recent graduates	3.96 (.620)	
Total sessions attended		
1-10	3.91 (.577)	.559
11-20	3.98 (.714)	

As shown in the table above, there were no statistically significant differences in the means of the composite utility scores of the respondents by the grouping variables.

Summary of the product evaluation results: The results of the product evaluation showed that the health disparities curriculum increased the self-efficacy of the medical residents in identifying and addressing disparities and this increase in self-efficacy was statistically

significant. The respondents reported high level of agreement that the curriculum made them more aware on implicit bias, cultural competency/humility, social determinants of equity, structural/systemic racism, social determinants of health. It was especially true for the perceptions of the physicians and patients, and systemic factors that affect the quality of care among these.

There was not statistically significant difference in the respondents' inclination to incorporate the cultural humility skills in their daily clinical encounters.

As a result of the HDC, the respondents indicated having more discussions on disparities, it was statistically significant for the residents belonging to the primary care specialties. Non-White and female residents also had more disparities-based discussions, although not statistically significant. The female residents and those belonging to primary care specialties also had a greater, statistically significant community partnerships. Although it was not statistically significant but the scholarly activity development on disparities was seen more among female residents, residents belonging to primary care specialties, and residents in the older age group.

The respondents indicated a high level of agreement on the utility of the curriculum, especially most favorable perceptions were about the curriculum as an excellent source of information. Although there were not statistically significant differences, the residents from the primary care specialties, those in the younger age group, and the non-White residents had higher favorable perceptions about the curriculum utility.

CHAPTER V

DISCUSSION

The purpose of this study was to evaluate a Health Disparities Curriculum, a 3-year longitudinal curriculum developed to provide education on health disparities and health care disparities to medical residents within the twelve residency programs affiliated with the University of Illinois College of Medicine at Peoria (UICOMP). Specifically, this study investigated the perceptions of the medical residents on the whether the curriculum achieved its stated goals and objectives, their perceptions on the teaching and learning process, review of their learning resources, medical residents' inputs on alternative approaches, and the outcomes of the curriculum. The respondents of this study were 130 medical residents representing twelve residency programs. This chapter summarizes the findings of the curriculum evaluation, discussion of both the quantitative and qualitative results as they relate to the literature, limitations and conclusions of the study, and the implications for health disparities education within the graduate medical education.

Summary of findings

The findings from this theory-based evaluation of a Health Disparities Curriculum using the Stufflebeam's Context-Input-Process-Product framework, indicated that the curriculum was very well received. The residents perceived the curriculum positively in its achievement of stated goals and objectives, relevance, and utility of the curriculum. The participants' self-efficacy to identify and address disparities increased statistically significantly after the implementation of the curriculum. Participants also reported increased engagement in conversations on disparities with their faculty and peers, and enhanced community partnerships, especially among female residents and residents belonging to primary care specialties. The participants provided very

positive feedback on the instructor's competence. Nearly all the participants that provided qualitative feedback appreciated the content, structure, and valued small group discussions and in-person delivery. The participants also appreciated the brevity of sessions, and workshop structure. The content that was deemed valuable by the participants included implicit bias, microaggressions, self-reflection and privilege. The participants acutely believed in the need for more interactive content, skill-based education/actionable strategies and community engagement to make a practical difference. Some participants expressed the need for specialty-specific content/resources. The medical residents expressed that limited time availability was a challenge to attending the HDC sessions. Some of them also thought that the length of sessions and duration of course were limiting factors, given very limited time availability to incorporate clinical and non-clinical curricula in formal graduate medical education and competing demands on time. This study also identified a unique attitudinal barrier where the medical residents expressed their understanding of disparities and the influencing factors, but expressed their inability to make an individual impact in addressing these disparities as they perceived these factors 'beyond their control'.

Discussion

The available literature on existing health disparities curricula/diversity curricula/ cultural competency/SDOH/advocacy/racial justice and equity curricula within GME, is limited. While the current health disparities curriculum exhibited the following similarities in terms of curricular format such as 1) use of didactic and experiential components, 2) longitudinal format, 3) use of various instructional modalities such as small group discussions, quizzes, community-based exercises, and 4) use of evaluation to assess curricular effectiveness and learner outcomes, there was no one curriculum either within graduate medical education or otherwise that shared

identical criteria. Most of the curriculum evaluations that exist did not link the ACGME defined competencies with learning activities and learner outcomes (Atkinson et al., 2022; Chung et al., 2023; Hasnain et al., 2014; Howell et al., 2019; Hunter & Thomson, 2019). Similar to other existing curricula, the current health disparities curriculum did not link the learning activities with the ACGME defined competencies.

The current health disparities curriculum differed from other curricula discussed in the literature in the following ways: 1) Curricular content was based on a unique theme for each year. The content was such that it could be used as stand-alone material for that year and/or would build over each succeeding year, 2) Most curricula in the existing literature were implemented within one specialty and a few were implemented for up to five specialties. To the researcher's knowledge, the current curriculum is the only curriculum that was implemented for a total of 12 specialties affiliated with a college of medicine simultaneously for a period of 3 years, 3) In terms of primary care and non-primary care specialties, most of the previously described curricula were implemented within primary care specialties, predominantly within Internal medicine, Family Medicine, and Pediatrics. The current curriculum was implemented for primary care specialties as well as non-primary care specialties, 4) Evaluation methods: There was variability in the evaluation methods used. The current curriculum utilized C-I-P-P framework. This framework has been rarely used in terms of curriculum evaluation within GME (Atkinson et al., 2022; Chung et al., 2023; Hasnain et al., 2014; Howell et al., 2019; Hunter & Thomson, 2019; Toosi et al., 2021).

Evaluation outcomes:

Residents' course rating, satisfaction, perceptions/ratings on content relevance/appropriateness

For the current curriculum evaluation, there was a high level of agreement among the medical residents that the HDC met its stated goals and objectives and for the product evaluation, a high level of agreement on the utility of the curriculum. In evaluations of the other similar curricula, the medical residents responded favorably to the overall quality of the curricula (Chung et al., 2023; Hasnain et al., 2014; Howell et al., 2019). Hunter & Thomson (2019) in their scoping review on the evaluations of SDOH curricula, reported positive program-specific outcomes in 50% of the studies and reported high course ratings or resident satisfaction. Basu et al. (2017) described the outcomes for a one-year longitudinal social medicine and research-based health advocacy curriculum where 53% of the internal medicine residents (17/32) who completed the curriculum rated the overall quality of the course highly. In a social medicine curriculum that was implemented for the internal medicine, family medicine, and pediatrics residents, the participants rated the learning activities, appropriateness, and relevance of learning activities very favorably (Fornari et al., 2011). In a curriculum that taught racism as a social determinant of health to residents in family and community medicine residency program and graduate students from community health leadership program, the participants provided positive feedback on quality and value of the sessions on a set of five questions (Dennis et al., 2019). Unlike the current study, in the evaluations of other curricula that addressed the SDOH/health disparities/health equity or cultural competency/advocacy, the participants were rarely asked if the curriculum met its goals and objectives.

The process evaluation of the current curriculum showed that medical residents provided positive feedback on the content relevance. Similarly, in a cultural dexterity curriculum for surgical residents within 3 programs, qualitative feedback was collected through focus groups. Out of the five themes that emerged, one was relevance: The participants thought that cultural dexterity was relevant to patient centeredness and quality of care (Udyavar et al., 2018).
The following paragraphs describe and compare the outcomes of evaluations organized by learners' attributes measured.

Evaluation Outcomes: Change in residents' self-efficacy/confidence, awareness, competence, and attitude

Self-efficacy/Competence/confidence. The current study indicated high self-efficacy among the medical residents in identifying and addressing disparities after participating in the health disparities curriculum. In a study of an advocacy curriculum (Howell et al., 2019) found that respondents also demonstrated an increase in self-efficacy and increased likelihood of performing advocacy in future (Howell et al., 2019). The proportion of residents that felt 'confident' or 'extremely confident' about incorporating culturally relevant information into treatment plans, also increased at statistically significant levels (Jacobs, et al., 2019).

Awareness/Improved Understanding/Perceptions/Attitude. The medical residents in this study did report that the HDC curriculum made them more aware on implicit bias, cultural competency/humility, social determinants of equity, structural/systemic racism, social determinants of health. Similarly, in a longitudinal underserved community curriculum, the participating medical residents reported an increase in awareness of barriers to care and awareness of cultural factors. The residents in the study didn't report any change in their beliefs about the influence of socioeconomic and cultural factors on experiences with health care

(Jacobs et al., 2019). In a curriculum that was taught over four half-days over a month in collaboration with a community organization, participants valued insights into the patients' lives and had changed perceptions about the patients. This curriculum improved the residents' awareness about the community capacity and services to impact the patients' lives positively (Jacobs et al., 2003). In the current study, there was not statistically significant difference in the respondents' inclination to incorporate cultural humility skills in their daily clinical encounters, but (Mendez et al., 2020) stated that there was improvement participants' attitude in providing cross-cultural care after participating in the health equity, diversity, and inclusion curriculum. Horky et al., (2017) also reported improved attitudes on cultural competency among the pediatrics residents in the intervention group who participated in six online modules on cross cultural care.

In the current study, although not statistically significant, the residents belonging to primary care specialties, and non-white residents were more aware and had a more positive attitude to incorporate cultural humility into their practices. These findings are complimentary because the residents that identify as Black/African American, Hispanic, or Latino, and Native American/Alaska Native (also known as Underrepresented in Medicine (URiM)) are represented in higher proportions among the primary care specialties. Black and Asian physicians have higher proportion in internal medicine and pediatrics as compared to family medicine and general practice. Native Americans and Hispanics have higher proportions in family medicine and general practice (Xierali & Nivet, 2018).

Although not statistically significant, the findings of this study also show that the awareness and attitude towards cultural humility was more favorable in younger residents between 18-30 years. This can be attributed to increased exposure to equity related topics, and

availability of more formal curricula/electives/tracks on SDOH/equity/disparities during the undergraduate medical school training. The residents who had formal exposure to such a training in medical school may have more favorable perceptions, understanding and attitude towards these issues.

Evaluation outcomes: Instructor, facilitator, curriculum faculty

Very few studies on health disparities focused curricula in GME have discussed the role of the instructor/facilitator with respect to curriculum development and implementation. Extremely few studies have evaluated the instructor or facilitator's competence/performance. This study is unique in analyzing the instructor's competence based on the resident's feedback. In the field of sexuality education, following the development of National Sexuality Education Standards (NSES), the National Teacher Preparation Standards for Sexual Education (NTPSSE) were developed to provide guidelines into what an effective sexuality educator should know and do. These standards also serve as a tool for the sexuality educator's professional growth and development (Fisher & Cummings, 2016). Such standards for educators providing disparities focused education do not exist in the field of graduate medical education. Studies that evaluated sexuality education often report that the most important part of the curriculum is the teacher/facilitator. A school-based education program's effectiveness depends highly on the teacher. Instructor's commitment and comfort in delivering sex education impacted their teaching ability and there is a positive relationship between instructor's training and implementation fidelity. CDC also noted that along with training, strong support from administration and technical assistance to the sex educators were crucial (Leung et al., 2019). In the review of literature pertaining to disparities focused curricula in GME , the researcher did not

find any other study that specifically evaluated the instructor's competence as a part of the evaluation.

In the review of five surgical programs that had successfully implemented cultural competency curricula, three had continued the implementation and two programs discontinued. An important factor for the discontinuation was that faculty members/principal investigators that developed the programs had moved on to other positions. This highlighted the importance of interested faculty/point person/content expert in studying and furthering the cultural competency curricula (Shah et al., 2017). Similarly, in the curriculum on the social and structural determinants of urban American Indian and Alaska Native health, the authors discussed that the choice of facilitator as one of the most important components for the success of the workshop. The authors recommended AIAN faculty with knowledge in the content area, allies with expertise in DEI and SDOH, and use of community faculty or elders in residence who are members of AIAN/indigenous community with knowledge in the indigenous ways should be considered as potential facilitators. The authors advocated for more inclusivity in the facilitator's choice, considering greater number of potential facilitators will translate into higher potential for the workshop being taught to more faculty and trainees (Garcia et al., 2019).

Evaluation outcomes: Resident engagement in discussions, community engagement

The participants in this study reported an increase in discussions on disparities with their faculty and peers, and enhanced community partnerships. Similar to this study, in a curriculum that addressed racial disparities, the community teachers valued having open, direct discussions with the residents about the non-medical factors affecting patients' health and appreciated the opportunity to use their knowledge about the community to improve the physician-patient

interactions and the residents valued insights into the patients' lives through community visits and their interactions with the community teachers (Jacobs et al., 2003).

Evaluation outcomes: Residents' attendance

Residents' attendance in the HDC sessions was variable. This can be attributed to the fact that the residents' attendance to these sessions was not mandatory although implementing the didactic sessions was mandatory for all the programs. Another reason for variable attendance can be that residents on 'night floats' or on elective rotations at other sites are not required to attend these sessions. The programs that have academic half-days have better resident attendance. A unique finding of this study was statistically significant association between age, race, and specialty of residents and session attendance. Further study is required to understand the effect of these demographic variables on attendance. A concern with low attendance may be that is suggests lower/lack of interest in these topics. Few studies have inferred that surgeons generally lack interest in cultural competency education (Chun et al., 2009 and Weissman et al., 2005). This previous finding is contrary to current study result where the process evaluation indicated that the residents from the non-primary care specialties reviewed the shared resources more than primary care specialties at statistically significant levels indicating their interest in the topic.

Evaluation outcomes: Curricular areas for improvements, barriers

Fornari et al. (2011) stated that the areas of improvement suggested by the participants included more time to reflect and debrief, which was similar to the thoughts expressed by the participants in the current study: need for more time for discussion/more interactive content. The residents participating in a curriculum to address racial disparities through hospital-community partnerships thought that the rotation with four-half day sessions over one month was short with

inadequate time to get better understanding (Jacobs et al., 2003). Contrary to this finding, the participants in this study stated the need for shorter duration of course or simplifying the number of topics. It was also suggested that the curriculum be limited to residents in the beginning years of the residency. In favor of these suggestions, the investigator found that some surgical residencies do implement their cultural competency curricula only for their first-year residents (Shah et al., 2017). Similarly, only second and third year residents were invited to participate in one-year long health disparities curriculum (Noriea et al., 2017). In the current study, the reasoning for these suggestions was limited time availability to incorporate multiple curricular activities along with other competing responsibilities. Supporting this reasoning, not having enough days in the year for curriculum to support the program continuation and competing demands on residents' time were identified as barriers when the two surgical programs discontinued their cultural competency curricula (Shah et al., 2017).

The American Medical Association (AMA), in their 'Declaration of Professional Responsibility' affirmed that the physicians' professional responsibilities include advocacy focused on the promotion of societal health and well-being. AMA states that 'physicians must advocate for the social, economic, educational, and political changes that ameliorate suffering and contribute to human well-being' (Howell et al., 2019). The 'out of my control' attitude or their perceived lack of control to address disparities expressed by the medical residents in this study can be considered as a barrier to physicians' advocacy role. This attitudinal barrier may be addressed through the provision of community and specialty/program-specific resources, strategies, and skills-based education, otherwise the medical residents may not feel equipped despite the education on the disparities. Curricular framework like PACTS (Provide Awareness Cultural Dexterity Toolkit for Surgeons) that place a greater emphasis on skills acquisition and

adaptability to dynamic interpersonal circumstances, more interactive learning using simulation, more community engagement to provide exposure to patients' lives/experiences, involvement of community teachers, or flipped-classroom model that provide opportunity for discussion, role playing and feedback during the sessions can be considered as potential strategies to address this unique attitudinal barrier.

Reflections on the development and implementation of the current Health Disparities Curriculum

The development and implementation of the Health Disparities Curriculum was a monumental undertaking regardless of whether it served as the basis for a dissertation. The researcher reviewed a variety of literature on curriculum development, curricula that focused on SDOH, health disparities, healthcare disparities, social justice, and advocacy. The many hours exhausted in organizing lectures, videos, speakers, and community engagement activities was a great learning experience.

The investigator believes that an ACGME CLER Program visit in 2018 and the UICOMP GME leadership's commitment to act on the visit findings served as major impetus towards the creation of this health disparities curriculum. The curriculum development was time and resource intensive with the appointment of a full-time, paid faculty for the development and implementation of this curriculum. The investigator is a physician with a master's degree in public health and is a doctoral degree candidate with 10 plus years of experience in public health. The investigator has completed two 3-credit hour courses on health disparities as a part of her doctoral coursework and has continued to learn more on disparities throughout the development and implementation of this curriculum. The investigator dedicates 0.51FTE for the development and teaching of the curriculum. There is no external funding for the development,

implementation, and evaluation of the curriculum. The UICOMP-GME made the didactic component of this curriculum mandatory for all residency programs ensuring roll-out to and participation from all affiliated residency programs. All program directors have been supportive of the curriculum. To keep all the programs updated about the proceedings of the curriculum, the investigator schedules periodic meetings with the program directors and seeks their feedback. Noriea et al., (2017) also described similar facilitators in the development of health disparities curriculum including supportive leadership, chief resident and faculty champions, use of publicly available resources, and affiliated community clinics. This curriculum required 156 faculty and residents' hours for development, and no external funding was required for the development, implementation, and evaluation of the curriculum (Noriea et al., 2017). Similarly, (Shah et al., 2017) stated the factors that influence curricular implementation and sustainability. These include: 1) positive feedback from the residents, 2) continued support from the program directors and faculty, 3) continued involvement of the faculty members/principal investigators that developed the curricula. Other factors that support the implementation and sustainability of a curriculum include mandatory training requirement, OSCE or standardized patient format and use of validated assessment and evaluation tools to determine the residents' mastery of the curricular content. Researcher also agrees with (Shah et al., 2017) findings that the barriers for continued curriculum implementation include lack of time and lack of content.

The current curriculum utilized education/information focused approach and relied on the power of information to stimulate conversations and to provide motivation to the medical residents to identify their strengths and weaknesses. The need for skill-based education in the current curriculum was identified as the area of improvement based on the participants' feedback.

Although there is consensus on the need for physician education on disparities and physicians' leadership to reduce disparities, there is lack of clarity on what such education should entail. It is important to highlight the lack of standardized framework that would connect the ACGME core competencies with key concepts, learning activities and outcomes. Hasnain et al (2014) stated that none of the studies in their systematic review on health disparities curricula explicitly linked their learning activities with ACGME core competencies. The current curriculum under study also faces this limitation in that it doesn't link the curricular activities with specific ACGME competencies. Another compounding problem is that there is neither a common curriculum among the residency programs nor a standardized method to assess such a training. This leads to variability in the curricular development, implementation, and evaluation.

Use of CIPP in medical education

Evaluation is used to assess the quality of an educational program that can lead to revision, transformation, or truncation of the program. CIPP model provides comprehensive perspectives, constructive feedback to make informed decisions and its focus is on improving the program. The investigator of current study has not identified any study in the field of graduate medical education within USA that evaluated any curriculum by employing the CIPP framework. Thus, this current study fills a gap in literature on the use of this framework, and for a curriculum that is implemented GME-wide to twelve residency programs: to the best of researcher's knowledge, this effort is also a first in the field of graduate medical education.

Similar to most CIPP-based studies reviewed in the systematic review (Toosi et al., 2021), the current study also utilized quantitative methodology, utilized cross-sectional design, and utilized researcher-made questionnaires to evaluate the educational programs. The current study differed from other CIPP-based studies in its use of mixed-method methodology, which

was a method recommended by the authors of the systematic review (Toosi et al., 2021). Similar to the majority of the CIPP-based studies included in the systematic review, current study examined the learners' perspectives on the educational program and reported participants' high satisfaction with the program. One of the limitations of the CIPP-based studies was their focus on answering explicit and clear questions rather than measuring the overall values and competence of the program. This applies to the current study to some extent where explicitly written research questions guided the analysis, but the current study also reviewed relevant literature to establish the value of implementing a disparities-based curriculum in graduate medical education where there is paucity of such curricula, and this lack can be more pronounced for the non-primary care specialties. Regarding competence of the curriculum, the context, process, and output evaluation provided evidence of positive, favorable results. Therefore, the investigator believes that this curriculum may serve as a blueprint for those specialties which may be gearing towards incorporating SDOH/advocacy/disparities/cultural competency education in their formal curriculum. This is especially true for non-primary care specialties. The majority of the CIPP-based studies in the systematic review utilized took a goal-oriented approach and evaluated final achievements instead of using CIPP for program development. The current study utilized the same approach where CIPP was used to assess the effectiveness of the program and learner outcomes and it was not part of the program development. The investigator intends to revise the program based on the needs/improvements identified through this evaluation.

Limitations

The response rate for the current study was 46.68% after paper-based surveys were added as a measure to increase the response rate (134 respondents out of 287). A primary concern of a

low response is that it contributes to non-response bias. Meterko et al (2015) suggests that response rate is not necessarily predictive of response bias. Although high response rates are desirable for high precision and power, absolute threshold for adequate response may be unrealistic as the survey fatigue increases. They further assert that results from low response surveys should be considered on their merit as they may accurately represent the attitudes of the population and low response rates shouldn't be cited as reasons to dismiss the results as uninformative (Meterko et al., 2015).

Due to a lower than anticipated response rate, the results of the curriculum evaluation are not generalizable to other residency programs in the state or across the nation. Furthermore, the results of the study may also not be indicative of the perceptions of the residents within residency programs other that those at UICOMP, given the variability in geographic locations, composition of the residents and due to the fact that Health Disparities Curricula may be a rarity than a norm for the residency programs.

Although a small sample size study is limited in yielding precise estimates, a comparison with related literature on curricula addressing other aspects of health disparities (SDOH/diversity/advocacy/cultural competency/racial justice) within GME shows that number of respondents in this study is still the largest, with participants representing 12 residency programs. Previously, the number of participants that assessed a curriculum ranged from 10 to 103 with the later participating in a one-time unconscious bias workshop (Chung et al., 2023).

This study utilized convenience sampling which has disadvantages in generalizability as compared to probability sampling. Still, relative to conventional or heterogenous convenience samples, homogenous convenience samples have clear advantages over generalizability and yield a more accurate account of the target population estimates and subpopulation (Jager et al.,

2017). As probability samples need to be quite large, utilizing probability sampling in this study where the respondents are known for low response rates, would have affected the study severely. The investigator of this study believes that this convenience sample can be considered as homogenous, given that the target population and the sample can be limited to a specific sociodemographic subgroup, leading to a narrow sampling frame and a homogenous sample. Literature also shows that convenience samples are a norm for evaluations of curricula within GME. The survey questionnaire was administered as a self-reported instrument and the respondents were asked to provide information on their curricular participation retrospectively, this may attribute to a possibility of recall bias. To minimize its effect, the investigator focused on formulating clear and precise questions using forward recall technique.

Implications for graduate medical education

Graduate medical education on health equity is a crucial step towards eliminating health disparities by equipping the physicians with the knowledge, attitudes, practices, and skills to provide quality care to diverse populations. Although ACGME has implemented clear directives previously and more recently has enacted changes to the Common Program Requirements with respect to DEI, there is lack of literature describing the development, structure, implementation, and evaluation of relevant curricula. There is also a lack of evaluation of physician outcomes including change in behavior, and impact on patient care on these topics. There are only a few publications available to assist other programs in developing this essential training that also offer evidence of the effectiveness of their curricula. This study uniquely fills multiple gaps in literature: 1) This study provides the description of development, and implementation of a longitudinal curriculum that provides education on health disparities, health care disparities, factors influencing them, cultural competency and advocacy along with other relevant topics for

health equity, 2) This study utilizes a theory-based evaluation framework using Stufflebeam's CIPP model which has been rarely used in the evaluation of graduate medical curricula. This study provides evidence that this framework can be successfully utilized to analyze various components of a curriculum to improve the quality of the curricular intervention, 3) Most of the evaluations on relevant curricula in the literature do not provide any assessment on instructor's competence, although the instructor is one of the key elements in the success of a curricular intervention. This study uniquely fills this gap by providing the evidence of instructor's competence through the use of CIPP, 4) This study offers evidence of positive programmatic and learner outcomes following the curricular intervention, and 5) This study describes successful implementation of health disparities curriculum for twelve residency programs, and inputs from respective medical residents on this curriculum which are very favorable, 5) This study identified a unique attitudinal barrier 'Out of my control', or medical residents' perceived lack of control in addressing disparities. Further studies are necessary to understand its magnitude and strategies to address this barrier, 6) This study adds to the literature where there is documented need for resources that describe the structure, content, process, and outcomes of curricular intervention to guide the development of such initiatives by other programs.

Primary care specialties are front-runners in developing curricular interventions to provide education on the issues addressing SDOH/disparities/health equity/cultural competency/advocacy. The investigator believes that for all residency programs, especially, those within non-primary care specialties, who are interested in developing disparities/equity focused curriculum, or are interested in refining their curriculum, this study and the evidence presented here can serve as a resource/guideline so that they can successfully incorporate this

needed education and evaluation of curricular intervention within their formal educational curriculum.

Implication for Public Health and Medical Education

It is important to discuss the context and utility of the disparities-based curricula in the medical education. Health and healthcare disparities disproportionately affect racial and ethnic minority patient populations, and curricula focusing on these disparities are crucial to training well-rounded physicians that incorporate cultural humility to serve the health needs of increasingly diverse patient populations. Although ACGME has long advocated for disparities-based education, such education has been described as sub-optimal by faculty and the students and current curricula in medical education lack systematic, evidence-based teaching topics on disparities. There is a need for the development of a standardized framework linking curricular objectives, key concepts, learning activities, and learner outcomes with the ACGME competencies. Having a framework like this along with standardized goals, content, and outcome measures will strengthen the curricular development efforts within the residency programs. This enhanced framework and subsequently developed content may lead to improvement in engagement, utilization and satisfaction among the faculty and learners from primary as well as non-primary care specialties. Accrediting organizations can play a significant role in formulating curricular innovation given the need for shared educational objectives among specialties in the context of addressing disparities/achieving health equity.

The disparities-based education needs to be interactive along with the incorporation of practical strategies to address disparities and repeated exposure to population-based/ community-based issues. This will enhance physicians' acquisition of skills, attitudes, and competencies to effectively serve their patient populations.

In the context of disparities-based education in GME, there is need for utilizing comprehensive evaluation methods addressing programmatic, participant, patient, and academic outcomes. As primary and non-primary care specialties differ considerably in their focus, managed conditions, and expertise, more research and specialty-specific guidelines are required to address disparities.

Effective disparity-based education has positive effects for medical schools. Explicit attention to health disparities in the curriculum may result in improved recruitment and sense of inclusion among the underrepresented in medicine students (URiM), contributing to effective development of diversified physician workforce required to address the needs of diverse patient populations. Equitable access to medical education and healthcare quality improvement can be achieved by closing the healthcare workforce diversity gap.

Diversity and inclusion are foundational for reducing disparities and achieving health equity. That is why, education based on these principles, focused on addressing disparities is crucial to the development of a physician workforce that employs the medical knowledge and understanding of social environment to achieve equitable health outcomes for their patient populations. There is a lack of trained faculty in the medical education on these topics, there is opportunity for interdisciplinary collaboration among educators in the field of public health and medical education for curricular development.

Lastly, it is important to address the current times where DEI programs are cut across universities, and there is pushback against the DEI initiatives mainly led by the political agendas, manifested via supreme court and state legislatures that question the efficacy, impact and financial resources associated with these programs. In this scenario, it is essential that we consider the benefits of these programs/education. These programs and policies are avenues to

fight inequality/inequities. Students exposed to more diversity have enhanced cultural awareness and political participation.

Next Steps for the Health Disparities Curriculum

The next steps for the health disparities curriculum under study will be to address the needs identified in the evaluation, and to craft educational activities that will provide meaningful engagement and skills acquisition for medical residents to influence patient care/experiences. This will involve modifying the curricular goals and objectives, developing appropriate training activities, linking these training activities to the ACGME core competencies, and development of evaluation on programmatic/learner outcomes.

Conclusion

The implementation of a Health Disparities Curriculum is an important first step in raising awareness and building skills toward cultural competency, humility and recognition of Social Determinants of Health on health outcomes. Evaluating the effectiveness of the curriculum to achieve its stated goals is critical to continuous improvement for future implementation. The use of the CIPP-framework was helpful in assessing various components of the curricular intervention systematically, including in the development of the evaluation instrument. The use of a CIPP-framework was also effective in identifying the areas of improvement, especially with the use of a mixed-methods design. This understanding is helpful in planning informed next steps for the curricular intervention and ultimately promoting satisfaction with the implementation of the curriculum.

REFERENCES

Abbasi, S. Q. (2019). *An emerging role for physicians in health policy advocacy.* mdedge.com. Retrieved Jan 7, 2021, from https://www.mdedge.com/gihepnews/article/209693/mixed-topics/emerging-role-physicians-health-policy-advocacy

Accreditation Council for Graduate Medical Education. (2017). *Common program requirements.* https://acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRs_2017-07-01.pdf

Accreditation Council for Graduate Medical Education. (2020). Clinical learning environment review. https://www.acgme.org/What-We-Do/Initiatives/Clinical-Learning-Environment-Review-CLER

Accreditation Council for Graduate Medical Education. (n.d.). *ACGME-about US.* https://www.acgme.org/About-Us/Overview

Unnatural causes: Is inequality making us sick? Adelman, L., Smith, L., Herbes-Sommers, C., Strain, T., MacLowry, R., Stange, E., Garcia, R., Rodriguez, M., Fortier, J., Lee, E., Rutenback, J., Scott, C., Williams, A., Ragazzi, C., Phillips, T., McCarthy, S., Chisolm, R., Weaver, J., Walker, K., . . . Baynard, J. (Directors). (2008).[Video/DVD] San Francisco, California: California Newsreel.

Adler, N. E., Cutler, D. M., Fielding, J. E., Galea, S., Glymour, M., Koh, H. K., & Satcher, D. (2017). Addressing social determinants of health and health disparities. In Dzau, V.J., McClellan, M., J. M. McGinnis & E. M. Finkelman (Eds.), *Vital directions for health and*

health care: An initiative of the national academy of medicine (). National Academy of Medicine.

Agency for Healthcare Research and Quality. (2013). *2012 national healthcare disparities report.* Rockville, MD: Agency for Healthcare Research and Quality. https://archive.ahrq.gov/research/findings/nhqrdr/nhdr12/index.html

American Association of Medical Colleges. AAMC Facts & Figures 2016. Current trends in medical education. https://www.aamcdiversityfactsandfigures2016.org/

American Association of Medical Colleges. (2020). *Report on residents.* AAMC. Retrieved Jan 8, 2021, from https://www.aamc.org/data-reports/students-residents/report/report-residents

American Cancer Society. (2020). *Cancer facts & figures 2020.* cancer.org. Retrieved Jan 3, 2021, from https://www.cancer.org/research/cancer-facts-statistics/all-cancer-facts-figures/cancer-facts-figures-2020.html

American Diabetes Association. (n.d.). Statistics about diabetes. https://www.diabetes.org/. https://www.diabetes.org/resources/statistics/statistics-about-diabetes#:~:text=Prevalence%3A%20In%202018%2C%2034.2%20million,of%20the%20population%2C%20had%20diabetes.&text=Undiagnosed%3A%20Of%20the%2034.2%20million,and%207.3%20million%20were%20undiagnosed.

American Medical Association. (n.d.). *Reducing disparities in health care.* American Medical Association. Retrieved Feb 19, 2021, from https://www.ama-assn.org/delivering-care/patient-support-advocacy/reducing-disparities-health-care

American Psychological Association. (n.d.). *Health disparities fact sheet.* https://www.apa.org/topics/health-disparities/fact-sheet

Arias, E., Xu, J. (2020). United states life expectancy tables, 2018. *National Vital Statistics Reports, 69*(12)

Association of American Medical Colleges. (2020). 2020 FACTS: Enrollment, graduates, and MD-PhD data. AAMC. Retrieved Jan 6, 2021, from https://www.aamc.org/data-reports/students-residents/interactive-data/2020-facts-enrollment-graduates-and-md-phd-data

Atkinson, R. B., Khubchandani, J. A., Chun, M. B. J., Reidy, E., Ortega, G., Bain, P. A., Demko, C., Barreiro-Rosado, J., Kent, T. S., & Smink, D. S. (2022). Cultural competency curricula in US graduate medical education: A scoping review. *Journal of Graduate Medical Education, 14*(1), 37-52. https://10.4300/JGME-D-21-00414.1

Aysola, J., & Myers, J. S. (2018). Integrating training in quality improvement and health equity in graduate medical education: Two curricula for the price of one. *Academic Medicine, 93*(1), 31-34. https://10.1097/ACM.0000000000002021

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *The Lancet, 389*(10077), 1453-1463. https://10.1016/S0140-6736(17)30569-X

Barr, D. (2014). *Health disparities in the United States: Social class, race, ethnicity and health*. Johns Hopkins University Press.

Basu, G., Pels, R. J., Stark, R. L., Jain, P., Bor, D. H., & McCormick, D. (2017). Training internal medicine residents in social medicine and research-based health advocacy: A novel, in-depth curriculum. Academic Medicine: Journal of the Association of American Medical Colleges, 92(4), 515-520. https://10.1097/ACM.0000000000001580

Bernard, R. (2013). *Social research methods: Qualitative and quantitative approaches.* ((2nd ed.). ed.). Sage Publications.

Bhandari, P. (2020). *Internal validity | definition, threats, and examples.* Scribbr. Retrieved Jun 19, 2021, from https://www.scribbr.com/methodology/internal-validity/

Blanco, I., Barjaktarovic, N., & Gonzalez, C. (2020). Addressing health disparities in medical education and clinical practice. *Rheumatic Disease Clinics,* (46), 179-191.

Bostick, N., Morin, K., Benjamin, R., & Higginson, D. (2006). Physicians' ethical responsibilities in addressing racial and ethnic healthcare disparities. *Journal of the National Medical Association, 98*(8), 1329-1334. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569559/

Boyle, P. (2021). *America's medical residents, by the numbers.* AAMC. Retrieved Jan 8, 2021, from https://www.aamc.org/news-insights/america-s-medical-residents-numbers

Brandon, D., Isaac, L., & LaVeist, T. (2005). The legacy of Tuskegee and trust in medical care: Is Tuskegee responsible for race differences in mistrust of medical care? *Journal of the National Medical Association, 97*(7), 951-956.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://10.1191/1478088706qp063oa

Brent Powell. *Utilizing the CIPP model as a means to develop an integrated service-learning component in a university health course.*

Burt, Catherine, Woodwell, David. (2005). Tests of methods to improve response to physician surveys. *Division of Health Care Statistics, National Center for Health Statistics,* https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&ved=0CDgQw7AJahcKEwioiv26jK3_AhUAAAAAHQAAAAAQAw&url=https%3A%2F%2Fwww.fcsm.gov%2Fassets%2Ffiles%2Fdocs%2F2005FCSM_Burt_Woodwell_VIIB.pdf&psig=AOvVaw0LoxlMGnQT_WXG7cJqeUwM&ust=1686087726206301

Butler, M., McCreedy, E., Schwer, N., Burgess, D., Call, K., Przedworski, J., Rosser, S., Larson, S., Allen, M., Fu, S., & Kane, R. L. (2016). *Improving cultural competence to reduce health disparities*. Agency for Healthcare Research and Quality (US).

Cardinal, L., Maldonado, M., & Fried, E. (2016). A national survey to evaluate graduate medical education in disparities and limited english proficiency: A report from the AAIM diversity and inclusion committee. *The American Journal of Medicine, 129*(1), 117-125. https://10.1016/j.amjmed.2015.09.007

Carter-Pokras, O., & Baquet, C. (2002). What is a "health disparity"? *Public Health Reports, 117*(5), 426-434. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497467/

Centers for Disease Control and Prevention. (2019a). *Health, united states spotlight: Racial and ethnic disparities in heart disease*

Centers for Disease Control and Prevention. (2019b). *Physical activity builds a healthy and strong America.*

Centers for Disease Control and Prevention. (2020a). *Current cigarette smoking among adults in the United States.* Centers for Disease Control and Prevention. Retrieved Jan 3, 2021, from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm

Centers for Disease Control and Prevention. (2020b). *Economic trends in tobacco.* Centers for Disease Control and Prevention. Retrieved Jan 3, 2021, from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm

Centers for Disease Control and Prevention. (2020c). *Health effects of cigarette smoking.* Centers for Disease Control and Prevention. Retrieved Jan 3, 2021, from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm

Centers for Disease Control and Prevention. (2020d). *Infant mortality* . Centers for Disease Control and Prevention. Retrieved Jan 2, 2021, from https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm

Centers for Medicare and Medicaid. (2019). *National health expenditure data.* https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical

Chandler, C. E., Williams, C. R., Turner, M. W., & Shanahan, M. E. (2022). Training public health students in racial justice and health equity : A systematic review. *Public Health Reports (Washington, D.C.: 1974), 137*(2), 375-385. https://10.1177/00333549211015665

Chun, M. B. J., Young, K. G. M., & Jackson, D. S. (2009). Incorporating cultural competency into the general surgery residency curriculum: A preliminary assessment. International Journal of Surgery (London, England), 7(4), 368-372. https://10.1016/j.ijsu.2009.06.003

Chung, A. S., Cardell, A., Desai, S., Porter, E., Ghei, R., Akinlosotu, J., & Ogedegbe, C. (2023). Educational outcomes of diversity curricula in graduate medical education. Journal of Graduate Medical Education, 15(2), 152-170. https://10.4300/JGME-D-22-00497.1

Clarke, T., Schiller, J., & Boersma, P. (2020). *Early release of selected estimates based on data from the 2019 national health interview survey.* (). Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/nhis/earlyrelease/EarlyRelease202009-508.pdf

CLER Evaluation Committee. (2019). *CLER pathways to excellence: Expectations for an optimal clinical learning environment to achieve safe and high-quality patient care, version 2.0.* (). Chicago, IL: Accreditation Council for Graduate Medical Education. https://10.35425/ACGME.0003 https://www.acgme.org/Portals/0/PDFs/CLER/1079ACGME-CLER2019PTE-BrochDigital.pdf

Co, J., Weiss, K., Koh, N., & Wagner, R. (2018). *CLER program. CLER national report of findings 2018: Executive summary.* (). Chicago, IL: Accreditation Council for Graduate

Medical Education. https://www.acgme.org/Portals/0/PDFs/CLER/CLER_2018_Executive_Summary_DIGITAL_081418.pdf

Cohen, R., Terlizzi, E., & Martinez, M. (2019). *Health insurance coverage: Early release of estimates from the national health interview survey, 2018.* (). Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf

Commission on the social determinants of Health. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health. final report of the commission on social determinants of health.* (). Geneva: World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/43943/9789241563703_eng.pdf;jsessionid=96E177F2A4AE38E8228433BD1908A598?sequence=1

Creswell, J., & Poth, C. (2018). *Qualitative inquiry and research design* (4th ed.). Sage Publications.

Creswell, J. W. (2014). *Research design:Qualitative, quantitative and mixed method approaches* (Fourth edition, ed.). Sage Publications.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (Fifth edition ed.). Sage Publishing.

Cunningham, C. T., Quan, H., Hemmelgarn, B., Noseworthy, T., Beck, C. A., Dixon, E., Samuel, S., Ghali, W. A., Sykes, L. L., & Jetté, N. (2015). Exploring physician specialist

response rates to web-based surveys. *BMC Medical Research Methodology, 15*, 32. https://10.1186/s12874-015-0016-z

Danish Health and Medicines Authority. (2014). The seven roles of physicians. https://www.sst.dk/en/news/2013/~/media/39D3E216BCBF4A9096B286EE44F03691.ashx

Dehlendorf, C., Bryant, A. S., Huddleston, H. G., Jacoby, V. L., & Fujimoto, V. Y. (2010). Health disparities: Definitions and measurements. American Journal of Obstetrics and Gynecology, 202(3), 212-213. https://10.1016/j.ajog.2009.12.003

Dehon, E., Weiss, N., Jones, J., Faulconer, W., Hinton, E., & Sterling, S. (2017). A systematic review of the impact of physician implicit racial bias on clinical decision making. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine, 24*(8), 895-904. https://10.1111/acem.13214

Dennis, S. N., Gold, R. S., & Wen, F. K. (2019). Learner reactions to activities exploring racism as a social determinant of health. *Family Medicine, 51*(1), 41-47. https://10.22454/FamMed.2019.704337

Drost, E. (2011). Validity and reliability in social science research. *Education Research and Perspectives, 38*(1), 105-124.

Dupras, D., Wieland, M., Halvorsen, A., Maldonado, M., Willett, L., & Harris, L. (2020). Assessment of training in health disparities in US internal medicine residency programs. *JAMA Network Open, 3*((8):e2012757) https://10.1001/jamanetworkopen.2020.12757

ERIC - EJ1308465 - evaluation of competency based medical education curriculum, international journal of progressive education, 2021. https://eric.ed.gov/?id=EJ1308465

Fisher, C. M., & Cummings, C. A. (2016). Assessing teacher confidence and proficiency with sexuality education standards. *Pedagogy in Health Promotion, 2*(2), 101-107. https://10.1177/2373379915618216

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: A systematic review. *BMC Medical Ethics, 18*(1), 19. https://10.1186/s12910-017-0179-8

Fornari, A., Anderson, M., Simon, S., Korin, E., Swiderski, D., & Strelnick, A. H. (2011). Learning social medicine in the bronx: An orientation for primary care residents. *Teaching and Learning in Medicine, 23*(1), 85-89. https://10.1080/10401334.2011.536898

Frye, A. W., & Hemmer, P. A. (2012). Program evaluation models and related theories: AMEE guide no. 67. *Medical Teacher, 34*(5), 288. https://10.3109/0142159X.2012.668637

Fune, J., Chinchilla, J. P., Hoppe, A., Mbanugo, C., Zuellig, R., Abboud, A. T., Oboh, O., & Monica van de Ridder, J. M.Lost in translation: An OSCE-based workshop for helping learners navigate a limited english proficiency patient encounter. *MedEdPORTAL : The Journal of Teaching and Learning Resources, 17*, 11118. https://10.15766/mep_2374-8265.11118

Garcia, A. N., Castro, M. C., & Sánchez, J. P. (2019). Social and structural determinants of urban american indian and alaska native health: A case study in los angeles. *MedEdPORTAL : The*

Journal of Teaching and Learning Resources, 15, 10825. https://10.15766/mep_2374-8265.10825

Gee, G. C., & Ford, C. L. (2011). Structural racism and health inequities. *Du Bois Review : Social Science Research on Race, 8*(1), 115-132. https://10.1017/S1742058X11000130

Glatthorn, A. A., Boschee, F., Whitehead, B. M., & Boschee, B. (2015). *Curriculum leadership: Strategies for development and implementation*. Sage Publishing.

Goleman, M. J. (2001). Teaching pediatrics residents to communicate with patients across differences. *Academic Medicine, 76*(5), 515-516. https://10.1097/00001888-200105000-00047

Green, A. R., Carney, D. R., Pallin, D. J., Ngo, L. H., Raymond, K. L., Iezzoni, L. I., & Banaji, M. R. (2007). Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. *Journal of General Internal Medicine, 22*(9), 1231-1238. https://10.1007/s11606-007-0258-5

Gregg, J., Solotaroff, R., Amann, T., Michael, Y., & Bowen, J. (2008). Health and disease in context: A community-based social medicine curriculum. *Academic Medicine: Journal of the Association of American Medical Colleges, 83*(1), 14-19. https://10.1097/ACM.0b013e31815c67f0

Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., Tourangeau, & R. (2009). *Survey methodology* (2nd ed.). Wiley.

Gruen, R., Campbell, E., & Blumenthal, D. (2006). Public roles of US physicians community participation, political involvement, and collective advocacy. *Journal of American Medical Association, 296*(20), 2467-2475.

Guba, E. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology, 29*(2), 75-91.

Hammarlund, R., Hamer, D., Crapanzano, K., Bernard, R., Nzodom, C., James, C., Johnson, A., Kirby, D., Hetzler, L., Woodward, C., Sulzer, J., Rabalais, L., & Calongne, L. (2017). Health care disparities knowledge, attitudes, and behaviors in resident physicians. *Journal of Patient-Centered Research and Reviews, 4*(4), 230-236. https://10.17294/2330-0698.1450

Hasnain, M., Massengale, L., Dykens, A., & Figueroa, E. (2014). Health disparities training in residency programs in the United States. *Family Medicine, 46*(3), 186-191.

Hasnain, M., Massengale, L., Dykens, A., & Figueroa, E. (2014). Health disparities training in residency programs in the united states. *Family Medicine, 46*(3), 186-191. https://www.ncbi.nlm.nih.gov/pubmed/24652636

Health Resources and Services Administration. (2017). *Goal 1: Improve access to quality health services.* Official web site of the U.S. Health Resources & Services Administration. Retrieved Jan 13, 2021, from https://www.hrsa.gov/about/strategic-plan/goal-1.html

Health Knowledge. (n.d.). *Design, applications, strengths, and weaknesses of cross-sectional, analytical studies (including cohort, case-control and nested case-control studies), and intervention studies (including randomised controlled trials).* Health Knowledge. Retrieved

Jul 23, 2021, from https://www.healthknowledge.org.uk/public-health-textbook/research-methods/1a-epidemiology/cs-as-is

Healthy People, 2. (2020). *Access to health services.* https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services

Hendra, R., & Hill, A. (2019). Rethinking response rates: New evidence of little relationship between survey response rates and nonresponse bias. *Evaluation Review, 43*(5), 307-330. https://10.1177/0193841X18807719

Heron, M. (2019). Deaths: Leading causes for 2017, national vital statistics reports. *National Vital Statistics Reports, 68*(6), 1-77. https://search.proquest.com/docview/2410346109

Horky, S., Andreola, J., Black, E., & Lossius, M. (2017). Evaluation of a cross cultural curriculum: Changing knowledge, attitudes, and skills in pediatric residents. *Maternal and Child Health Journal, 21*(7), 1537-1543. https://10.1007/s10995-017-2282-3

How to use the CIPP model for program evaluation. (2020). Work - Chron.com. https://work.chron.com/use-cipp-model-program-evaluation-10592.html

Howell, B. A., Kristal, R. B., Whitmire, L. R., Gentry, M., Rabin, T. L., & Rosenbaum, J. (2019). A systematic review of advocacy curricula in graduate medical education. *Journal of General Internal Medicine, 34*(11), 2592-2601. https://10.1007/s11606-019-05184-3

Hucko, L., Al-khersan, H., Lopez Dominguez, J., Cavuoto, K. M., Scott, N. L., Williams, B. K., Fountain, T., & Sridhar, J. (2022). Racial and ethnic diversity of U.S. residency programs,

2011 2019. *New England Journal of Medicine, 386*(22), 2152-2153. https://10.1056/NEJMc2200107

Hunter, K., & Thomson, B. (2019). A scoping review of social determinants of health curricula in post-graduate medical education. *Canadian Medical Education Journal, 10*(3), e61-e71.

IBM Corp. (2021). IBM SPSS statistics for windows [computer software]. Armonk, NY: IBM Corp.

Jacobs, C., Seehaver, A., & Skiold-Hanlin, S. (2019). A longitudinal underserved community curriculum for family medicine residents. *Family Medicine, 51*(1), 48-54. https://10.22454/FamMed.2019.320104

Jacobs, E. A., Kohrman, C., Lemon, M., & Vickers, D. L. (2003). Teaching physicians-in-training to address racial disparities in health: A hospital-community partnership. *Public Health Reports, 118*(4), 349-356. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497548/

Jager, J., Putnick, D. L., & Bornstein, M. H. (2017). More than just convenient: The scientific merits of homogeneous convenience samples. *Monographs of the Society for Research in Child Development, 82*(2), 13-30. https://10.1111/mono.12296

Johnson, S., Fair, M., Howley, L., Prunuske, J., Cashman, S., Carney, J., Jarris, Y., Deyton, L., Blumenthal, D., Krane, N., Fiebach, N., Strelnick, A., Morton-Eggleston, E., Nickens, C., & Ortega, L. (2020). Teaching public and population health in medical education: An evaluation framework. *Academic Medicine, 95*(12), 1853-1863. https://10.1097/ACM.0000000000003737

Jones, C. P. (2000). Levels of racism: A theoretic framework and a gardener's tale. *American Journal of Public Health, 90*(8), 1212-1215. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446334/

Joszt, L. (2019). *5 things about medical mistrust.* American Journal of Managed Care. Retrieved Jan 14, 2021, from https://www.ajmc.com/view/5-things-about-medical-mistrust

Kalter, L. (2019). *U.S. medical school enrollment rises 30%.* aamc.org. https://www.aamc.org/news-insights/us-medical-school-enrollment-rises-30

Kamal, R., McDermott, D., & Hudman, J. (2019, October 18,). What do we know about infant mortality in the U.S. and comparable countries? https://www.healthsystemtracker.org/chart-collection/infant-mortality-u-s-compare-countries/

King, M. (2014, -09-25T11:19:00+00:00). The importance of cultural diversity in healthcare | brainwaves. https://learn.uvm.edu/blog/blog-health/cultural-diversity-in-healthcare

Klein, M. D., Alcamo, A. M., Beck, A. F., O'Toole, J. K., McLinden, D., Henize, A., & Kahn, R. S. (2014). Can a video curriculum on the social determinants of health affect residents' practice and families' perceptions of care? *Academic Pediatrics, 14*(2), 159-166. https://10.1016/j.acap.2013.11.002

Klein, M., & Vaughn, L. M. (2010). Teaching social determinants of child health in a pediatric advocacy rotation: Small intervention, big impact. *Medical Teacher, 32*(9), 754-759. https://10.3109/01421591003690320

Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness *The American Journal of Occupational Therapy, 45*(3), 214-222.

Laerd statistics. (n.d.). https://statistics.laerd.com/.

LaVeist, T. (2005). *Minority populations and health: An introduction to health disparities in the United States*. Jossey-Bass.

LaVeist, T. (2011). Perspective: The spectrum of health-care disparities in the USA. In R. Williams (Ed.), *Healthcare disparities at the crossroads with healthcare reform*. Springer. https://https://doi.org/10.1007

LaVeist, T., Nickerson, K., & Bowie, J. (2000). Attitudes about racism, medical mistrust and satisfaction with care among african american and white cardiac patients. *Medical Care Research and Review,* (57 Supplement 1), 146-161. https://https://doi.org/10.1177/1077558700057001S07

LaVeist, T. (2005). *Minority populations and health-an introduction to health disparities in the United States*. Jossey-Bass.

LaVeist, T. A., Isaac, L. A., & Williams, K. P. (2009). Mistrust of health care organizations is associated with underutilization of health services. *Health Services Research, 44*(6), 2093-2105. https://10.1111/j.1475-6773.2009.01017.x

Lawrence Tarves Brown. *The multilevel, multicultural, and multi-temporal ecosocial framework of population health : How neighborhoods, culture, and history Impact Health outcomes*

and produce health disparities. https://dc.uthsc.edu/cgi/viewcontent.cgi?article=1033&context=dissertations

Lee, S. Y., Shin, J. S., & Lee, S. H. (2019). How to execute context, input, process, and product evaluation model in medical health education. *Journal of Educational Evaluation for Health Professions, 16*https://10.3352/jeehp.2019.16.40

Lekas, H., Pahl, K., & Fuller Lewis, C. (2020). Rethinking cultural competence: Shifting to cultural humility. *Health Services Insights, 13*, 1178632920970580. https://10.1177/1178632920970580

Leung, H., Shek, D. T. L., Leung, E., & Shek, E. Y. W. (2019). Development of contextually-relevant sexuality education: Lessons from a comprehensive review of adolescent sexuality education across cultures. *International Journal of Environmental Research and Public Health, 16*(4), 621. https://10.3390/ijerph16040621

Lockwood, A. H. (2004). The physician's role in society: Enhancing the health of individuals and the public. *AMA Journal of Ethics, 6*(4), 189-190. https://10.1001/virtualmentor.2004.6.4.msoc2-0404

Maldonado, M., Fried, E., DuBose, T., Nelson, C., & Breida, M. (2014). The role that graduate medical education must play in ensuring health equity and eliminating health care disparities. *Annals of the American Thoracic Society, 11*(4), 603-607. https://10.1513/AnnalsATS.201402-068PS

Maternal Health Task Force. (2015, -08-14T15:10:19+00:00). Maternal health in the united states. https://www.mhtf.org/topics/maternal-health-in-the-united-states/

McDermott, R.J., & Sarvela, P.D. (1999). *Health education evaluation and measurement—A practitioner's perspective.* (2nd ed.). McGraw-Hill.

McHugh, M. L. (2012). Interrater reliability: The kappa statistic. *Biochemia Medica, 22*(3), 276-282. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3900052/

Mendez, N., Pryce, P. A., Uwemedimo, O., Barone, S., & Goenka, P. (2020). Early impact of a health equity, diversity, and inclusion curricula on resident knowledge, attitudes and skill in cross-cultural care. *Pediatrics (Evanston), 146*(1_MeetingAbstract), 571-573. https://10.1542/peds.146.1MA6.571b

Meterko, M., Restuccia, J. D., Stolzmann, K., Mohr, D., Brennan, C., Glasgow, J., & Kaboli, P. (2015). Response rates, nonresponse bias, and data quality: Results from a national survey of senior healthcare leaders. *Public Opinion Quarterly, 79*(1), 130-144. https://10.1093/poq/nfu052

Minority population profiles - the office of minority health. U.S. Department of Health and Human Services, Office of Minority Health. Retrieved Jun 19, 2023, from https://www.minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=26

Nair, L., & Adetayo, O. (2019). Cultural competence and ethnic diversity in healthcare. *Plastic and Reconstructive Surgery – Global Open, 7*(5), e2219. https://10.1097/GOX.0000000000002219

National Academies of Sciences, Engineering, and Medicine, Health and Medicine, D., Board on Population Health and Public Health Practice, Committee on Community-Based Solutions to Promote Health Equity in the United States, & Baciu A, Negussie Y, Geller A, et al., [Eds]. (2017). *Communities in action: Pathways to health equity*. National Academies Press.

National Academies of Sciences, E., Division, H. a. M., Practice, Board on Population Health and Public Health, States, Committee on Community-Based Solutions to Promote Health Equity in the United, Baciu, A., Negussie, Y., Geller, A., & Weinstein, J. N. (2017). *The state of health disparities in the united states*. National Academies Press (US).

National Cancer Institute. (2016). *Cancer disparities - national cancer institute.* National Cancer Institute. Retrieved Jan 3, 2021, from https://www.cancer.gov/about-cancer/understanding/disparities

National Center for Health Statistics. (2019). *Health, united states, 2018.* (). Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/hus/hus18.pdf

National Health Interview Survey. (2018). Tables of summary health statistics. https://www.cdc.gov/nchs/nhis/shs/tables.htm

National Heart, Lung and Blood Institute. (n.d.). *Health disparities.* https://www.nhlbi.nih.gov/health/educational/healthdisp/#source1

National Institutes of Health. (2002). Strategic research plan and budget to reduce and ultimately eliminate health disparities volume I fiscal years 2002-2006. https://www.nimhd.nih.gov/docs/2002_2006__vol1_031003ed_rev.pdf

National Institutes of Health. (2014). *Health disparities*: http://www.nhlbi.nih.gov/health/educational/healthdisp

Nelson, A. (2002). Opening statement from March 22, 2002 briefing of institute of medicine: Unequal treatment: Confronting racial and ethnic disparities in health care. *Journal of the National Medical Association, 94*(8), 666-668. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2594273/pdf/jnma00325-0024.pdf

Noriea, A. H., Redmond, N., Weil, R. A., Curry, W. A., Peek, M. E., & Willett, L. L. (2017). Development of a multifaceted health disparities curriculum for medical residents. *Family Medicine, 49*(10), 796-802. https://fammedarchives.blob.core.windows.net/imagesandpdfs/pdfs/FamilyMedicineVol49Issue10Noriea796.pdf

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), 1609406917733847. https://10.1177/1609406917733847

Office of Disease Prevention and Health Promotion. (2020). *Healthy people 2030 framework.* https://health.gov/healthypeople/about/healthy-people-2030-framework

Office of Disease Prevention and Health Promotion. (n.d.a). *Reduce maternal deaths: MICH-04* . Healthy People 2030. https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/reduce-maternal-deaths-mich-04/data?group=None&state=United+States&from=2018&to=2018&populations=&op=Show+Data#views-exposed-form-hp-data-tables-page-1

Office of Disease Prevention and Health Promotion. (n.d.b). *Social determinants of health.* health.gov. https://health.gov/healthypeople/objectives-and-data/social-determinants-health

Office of Minority Health. (2011). *HHS action plan to reduce racial and ethnic health disparities. A nation free of disparities in health and health care.* ().Department of Health and Human Services. https://minorityhealth.hhs.gov/npa/files/Plans/HHS/HHS_Plan_complete.pdf

Office of Minority Health. (2019). *Minority population profiles.* https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=26

Office of minority health: Minority population profiles. (n.d.). Office of Minority Health, U.S. Department of Health and Human Sciences. https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=26

Ogunyemi, D. (2021). Defeating unconscious bias: The role of a structured, reflective, and interactive workshop. *Journal of Graduate Medical Education, 13*(2), 189-194. https://10.4300/JGME-D-20-00722.1

Opdenakker, R. (2006). Advantages and disadvantages of four interview techniques in qualitative research. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 7*(4) https://www.qualitative-research.net/index.php/fqs/article/view/175/391

Othering and Belonging Institute. (n.d.). *Diversity and health disparities.* Othering and Belonging Institute. https://belonging.berkeley.edu/healthdisparities

Peek, M. E., Wilson, S. C., Bussey-Jones, J., Lypson, M., Cordasco, K., Jacobs, E. A., Bright, C., & Brown, A. F. (2012). A study of national physician organizations' efforts to reduce racial and ethnic health disparities in the United States. *Academic Medicine: Journal of the Association of American Medical Colleges, 87*(6), 694-700. https://10.1097/ACM.0b013e318253b074

Pérez, M. A., & Luquis, R. R. (2014). *Cultural competence in health education and health promotion* (Second edition ed.). Jossey-Bass.

Petersen, E. E., Davis, N. L., Goodman, D., Cox, S., Syverson, C., Seed, K., Shapiro-Mendoza, C., Callaghan, W. M., & Barfield, W. (2019). Racial/ethnic disparities in pregnancy-related deaths — united states, 2007–2016. *Morbidity and Mortality Weekly Report, 68*(35), 762-765. https://10.15585/mmwr.mm6835a3

Physicians for National Health Program. ((n.d.). *Dr. martin luther king on health care injustice.* PNHP. Retrieved Dec 8, 2020, from https://pnhp.org/news/dr-martin-luther-king-on-health-care-injustice/

Popovic, A., & Huecker, M. R. (2023). Study bias. *StatPearls*. StatPearls Publishing.

Poston, D. L. (2020). *3 ways that the U.S. population will change over the next decade.* PBS NewsHour. Retrieved Feb 12, 2021, from https://www.pbs.org/newshour/nation/3-ways-that-the-u-s-population-will-change-over-the-next-decade

Ramadurai, D., Sarcone, E. E., Kearns, M. T., & Neumeier, A. (2021). A case-based critical care curriculum for internal medicine residents addressing social determinants of health.

MedEdPORTAL: The Journal of Teaching and Learning Resources, 17, 11128. https://10.15766/mep_2374-8265.11128

Rana, G. (n.d.). *Research guides: Health disparities in the U.S.: HealthCARE disparities data & statistics.* Retrieved Feb 23, 2021, from https://guides.lib.umich.edu/c.php?g=283106&p=1886147

Riegelman, R. (2020). *Population health: A primer*. Jones and Bartlett Learning.

Rindfuss, R. R., Choe, M. K., Tsuya, N. O., Bumpass, L. L., & Tamaki, E. (2015). Do low survey response rates bias results? evidence from japan. *Demographic Research, 32*(26 March), 797-828. https://10.4054/DemRes.2015.32.26

Rooholamini, A., Amini, M., Bazrafkan, L., Dehghani, M. R., Esmaeilzadeh, Z., Nabeiei, P., Rezaee, R., & Kojuri, J. (2017). Program evaluation of an integrated basic science medical curriculum in shiraz medical school, using CIPP evaluation model. *Journal of Advances in Medical Education & Professionalism, 5*(3), 148-154.

Saeed, A., Dixon, D.L., Yang, E. (2020). *Racial disparities in hypertension prevalence and management: A crisis control?* American College of Cardiology. Retrieved Jan 3, 2021, from http%3a%2f%2fwww.acc.org%2flatest-in-cardiology%2farticles%2f2020%2f04%2f06%2f08%2f53%2fracial-disparities-in-hypertension-prevalence-and-management

Satcher, D., & Higginbotham, E. J. (2008). The public health approach to eliminating disparities in health. *American Journal of Public Health, 98*(3), 400-403. https://10.2105/AJPH.2007.123919

Schnell, A. (2020, -05-20T19:04:23+00:00). What is kappa and how does it measure inter-rater reliability? https://www.theanalysisfactor.com/kappa-measures-inter-rater-reliability/

Serchen, J., Doherty, R., Atiq, O., & Hilden, D. (2021). A comprehensive policy framework to understand and address disparities and discrimination in health and health care: A policy paper from the American college of physicians. *Annals of Internal Medicine, 174*(1) https://www.acpjournals.org/doi/10.7326/M20-7219?_ga=2.136069942.660748046.1613681740-55589793.1613681740&

Serchen, J., Doherty, R., Hewett-Abbott, G., Atiq, O., & Hilden, D. (2021). *Health and public policy committee of the American college of physicians. understanding and addressing disparities and discrimination in education and in the physician workforce: A position paper of the American college of physicians.* Philadelphia, PA: American College of Physicians. https://www.acponline.org/acp_policy/policies/understanding_discrimination_in_education_physician_workforce_2021.pdf

Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology, 61*(3), 261-264. https://10.4103/0019-5154.182410

Shah, S. S., Sapigao, F. B., & Chun, M. B. J. (2017). An overview of cultural competency curricula in ACGME-accredited general surgery residency programs. *Journal of Surgical Education, 74*(1), 16-22. https://10.1016/j.jsurg.2016.06.017

Shaya, F. T., & Gbarayor, C. M. (2006). The case for cultural competence in health professions education. *American Journal of Pharmaceutical Education, 70*(6) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1803701/

Siegel, J., Coleman, D. L., & James, T. (2018). Integrating social determinants of health into graduate medical education: A call for action. *Academic Medicine, 93*(2), 159-162. https://10.1097/ACM.0000000000002054

Strelnick, A. H., Swiderski, D., Fornari, A., Gorski, V., Korin, E., Ozuah, P., Townsend, J. M., & Selwyn, P. A. (2008). The residency program in social medicine of montefiore medical center: 37 years of mission-driven, interdisciplinary training in primary care, population health, and social medicine. *Academic Medicine: Journal of the Association of American Medical Colleges, 83*(4), 378-389. https://10.1097/ACM.0b013e31816684a4

Stufflebeam, D. (2003). The CIPP model for evaluation: An update, a review of the model's development and a checklist to guide implementation. Paper presented at the *The 2003 Annual Conference of the Oregon Program Evaluators Network (OPEN),*

Stufflebeam, D., Madaus, G., & Kellaghan, T. (2000). *Evaluation models. viewpoints on educational and human services evaluation* (Second Edition. ed.). Kluwer Academic Publishers. https://10.1007/0-306-47559-6

Sullivan, G. M. (2011). A primer on the validity of assessment instruments. *Journal of Graduate Medical Education, 3*(2), 119-120. https://10.4300/JGME-D-11-00075.1

The Organization for Economic Cooperation and Development, (OECD). (2021). *Life expectancy at birth* . OECD.org. Retrieved Jan 2, 2021, from http://data.oecd.org/healthstat/life-expectancy-at-birth.htm

Toosi, M., Modarres, M., Amini, M., & Geranmayeh, M. (2021). Context, input, process, and product evaluation model in medical education: A systematic review. *Journal of Education and Health Promotion, 10*(1), 199. https://10.4103/jehp.jehp_1115_20

UCLA Institute for Digital Research and Education Statistical Consulting. (n.d.). *Creating and recoding variables | SPSS learning modules.* https://stats.idre.ucla.edu/spss/modules/creating-and-recoding-variables/

Udyavar, R., Smink, D. S., Mullen, J. T., Kent, T. S., Green, A., Harlow, A. F., Castillo-Angeles, M., Columbus, A. B., & Haider, A. H. (2018). Qualitative analysis of a cultural dexterity program for surgeons: Feasible, impactful, and necessary. *Journal of Surgical Education, 75*(5), 1159-1170. https://10.1016/j.jsurg.2018.01.016

United Nations Children's Fund. (2019). *Maternal mortality rates and statistics.* UNICEF DATA. Retrieved Jan 2, 2021, from https://data.unicef.org/topic/maternal-health/maternal-mortality/

University of Illinois College of Medicine at Peoria. (2018). *University of Illinois College of Medicine at Peoria: Fast facts*. https://peoria.medicine.uic.edu/wp-content/uploads/sites/8/2017/07/fastfacts.pdf.

University of Virginia Library Research Data Services and Sciences. (n.d.). *Using and interpreting Cronbach's alpha.* University of Virginia Library Research Data Services and Sciences. https://data.library.virginia.edu/using-and-interpreting-cronbachs-alpha/

van Ryn, M., & Burke, J. (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social Science & Medicine (1982), 50*(6), 813-828. https://10.1016/s0277-9536(99)00338-x

VanGeest, J. B., Johnson, T. P., & Welch, V. L. (2007). Methodologies for improving response rates in surveys of physicians: A systematic review. *Evaluation & the Health Professions, 30*(4), 303-321. https://10.1177/0163278707307899

Vespa, J., Medina, L., & Armstrong, D. (2018). *Demographic turning points for the united states: Population projections for 2020 to 2060. population health reports,* (). Washington, DC: United States Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1144.pdf

Wah, R. M. (2014). *How physicians are tackling health care disparities.* American Medical Association. Retrieved Jan 7, 2021, from https://www.ama-assn.org/about/leadership/how-physicians-are-tackling-health-care-disparities

Wang, Xiaofeng, and Cheng, Zhenshun. (2020). Cross-sectional studies: Strengths, weaknesses, and recommendations - ScienceDirect. *Chest, 158*(1), S65-S71. https://https://doi.org/10.1016/j.chest.2020.03.012

Weissman, J. S., Betancourt, J., Campbell, E. G., Park, E. R., Kim, M., Clarridge, B., Blumenthal, D., Lee, K. C., & Maina, A. W. (2005). Resident physicians' preparedness to provide cross-cultural care. *Jama, 294*(9), 1058-1067. https://10.1001/jama.294.9.1058

WHO Commission on the Social Determinants of Health. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health - final report.* ().World Health Organization. https://www.who.int/publications/i/item/WHO-IER-CSDH-08.1

Williams, D., Lawrence, J., & Davis, B. (2019). *Racism and health: Evidence and needed research*. Annual Reviews Inc.

Wood, W., McCollum, J., Kukreja, P., Vetter, I. L., Morgan, C. J., Hossein Zadeh Maleki, A., & Riesenberg, L. A. (2018). Graduate medical education scholarly activities initiatives: A systematic review and meta-analysis. *BMC Medical Education, 18*(1), 318. https://10.1186/s12909-018-1407-8

World Health Organization. (2015). *Trends in maternal mortality: 1990 to 2015: Estimates by WHO, UNICEF, UNFPA, world bank group and the United Nations population division.* (). Geneva: World Health Organization.

World Health Organization. (n.d.). *Social determinants of health, commission on social determinants of health 2005-2008.* https://www.who.int/social_determinants/thecommission/en/

WSU Office of Assessment for Curricular Effectiveness. (2020). *Quick guide to organizing assessment data for analysis.* https://ace.wsu.edu/documents/2016/10/organizing-assessment-data-for-analysis.pdf/

Xierali, I. M., & Nivet, M. A. (2018). The racial and ethnic composition and distribution of primary care physicians. *Journal of Health Care for the Poor and Underserved, 29*(1), 556-570. https://10.1353/hpu.2018.0036

APPENDIX A

Cover Letter and Survey Questionnaire

Evaluation of the UICOMP GME Health Disparities Curriculum

Greetings,

You are invited to participate in the survey study to help us better understand the usefulness, satisfaction, effectiveness, and outcomes of the UICOMP GME Health Disparities Curriculum. The study will evaluate the UICOMP GME Health Disparities Curriculum through the feedback received from the graduate learners (residents).

As you are a resident at the University of Illinois College of Medicine at Peoria (UICOMP), you are invited to participate in the study. The participation in this study is voluntary. Your responses will be kept confidential. There is minimal risk or stress anticipated for those answering the survey questions. If you do decide to take part in this study, you are free to change your mind and stop at any time. Your privacy is important; your personal information will be kept confidential. There is a very slight chance that you may be identified through your responses while analyzing the data. Your participation in this survey and/or re-identification will not affect your performance evaluation in the residency program in any way. The results will be presented in aggregate form with no individual information. The survey will take approximately 5 to 10 minutes of your time.

If you are willing to participate in the **Evaluation of the UICOMP GME Health Disparities Curriculum** study, please complete the following questionnaire. If you have questions regarding your participation in this research study, if you have any questions about your rights as a research subject, please feel free to contact me, Dr. Gauri Shevatekar (Principal Investigator) at gks8116@uic.edu

The study is approved by the Institutional Review Board of the University of Illinois College of Medicine at Peoria. If you have any concerns about this study, you can call the UICOMP IRB Office at (309)-680- 8630 and speak with Ms. Mindy Reeter. The study is approved by the Institutional Review Board of the Georgia Southern University (IRB Protocol Number H22367). If you have any concerns about this study, please contact the Principal Investigator, Dr. Gauri Shevatekar at gks8116@uic.edu. Thank you in advance for your participation and time.

Warm Regards,
Gauri Shevatekar, MBBS, MPH, CHES
Instructor, Population Health Management
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815, Main Street, Peoria, IL-61602

Please provide response below before continuing. **(**Appeared on both**:** Paper-Based and Electronic Survey)

I have read the research information. I consent to participate in this study.

□ Yes

□ No

Have you completed this survey previously, using electronic link or QR code? (Appeared on Electronic Survey on Qualtrics)

□**Yes**

□**No**

Please state if you are:

- First year resident
- Second year resident
- Third year resident
- Fourth year resident
- Fifth year resident
- Sixth year resident
- Seventh year resident
- Recent graduate

Please state your residency program:

Please state your age:

- 18 to 25 years
- 26 to 30 years
- 30 to 35 years
- 36 to 40 years
- 41 to 45 years
- 46 years and above

Please state the gender you identify as:

- Male
- Female
- Non-binary / Gender fluid
- Other
- Prefer not to say

Please state your race:

- African American/Black
- Asian
- Caucasian/White
- Native American/Alaska Native
- Native Hawaiian/Pacific Islander
- Belong to two or more races
- Prefer not to answer

Please state your ethnicity:

- Hispanic, Latino, or Spanish origin
- Not Hispanic, Latino, or Spanish origin
- Prefer not to answer

The Health Disparities Curriculum provided education on health disparities, health care disparities and the social-behavioral-cultural- economic-political factors influencing these disparities including stereotyping, bias, microaggressions, physician patient communication, mistrust, cultural competency, privilege, and racism.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The Health Disparities Curriculum addressed issues in the context of social determinants of health and at individual, familial, organizational, community and policy levels.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The Health Disparities Curriculum described the physicians' role as leaders to achieve health equity and social change through advocacy and community engagement.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The Health Disparities Curriculum provided information on local community needs and locally available and needed resources, initiatives by OSF, UnityPoint and UICOMP to address disparities.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The Health Disparities Curriculum provided specialty-specific strategic and research directives, and policies to address health and health care disparities.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

How many didactic sessions did you attend in the academic year 2019-20?

- 4
- 3
- 2
- 1

- None

How many didactic sessions did you attend in the academic year 2020-21?

- 4
- 3
- 2
- 1
- None

How many didactic sessions did you attend in the academic year 2021-22?

- 4
- 3
- 2
- 1
- None

Please share your comments on the didactic sessions and suggestions for improvement.

How many video screenings did you attend in the academic year 2019-20?
(Videos screened: 1) In sickness and in wealth: Is inequality making us sick? 2) Place matters)

- Both
- 1
- None

How many video screenings did you attend in the academic year 2020-21?
(Videos screened: Race the Power of an Illusion: Episode 3: The house we live in, 2) AAP video: Cultural Humility)

- Both
- 1
- None

How many video sessions did you attend in the academic year 2021-22?
(Videos screened: 1) Clinica de migrantes and 2) Talk with the experts (discussion snippets Dr. David Williams, Donald Berwick, and Dr. Lisa Cooper)

- Both
- 1
- None

Please share your comments on the video screening sessions and suggestions for improvement.

Did you participate in the Population Health Workshop in the year 2020-21? (Case on Point-Flint water crisis)

- Yes
- No
- Not sure

Did you participate in the Population Health Workshop in the year 2021-22? (Viewpoints on disparities, Microaggressions and Privilege)

- Yes
- No
- Not sure

Please share your comments on the population health workshop and suggestions for improvement.

The content in the didactic sessions was relevant to me as a physician.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

If the content in the didactic sessions was not relevant to you, please explain.

The population health workshop conducted were relevant to me as a physician.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

If the population health workshops were not relevant to you, please explain.

The video screening sessions were relevant to me as a physician.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

If the video screening sessions were not relevant to you, please explain.

The instructor was knowledgeable about the topics and related issues.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The instructor delivered the material in an organized and structured manner.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The instructor answered questions effectively.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The instructor was approachable and willing to help.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

I review the reading materials, training links and/or videos shared as learning resources after the lecture.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The content of the Health disparities curriculum met my expectations.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

If the content did not meet your expectations, please explain.

Overall, I would rate the Health Disparities Curriculum as an excellent source of information.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Please share your suggestions to improve the Health Disparities Curriculum.

On a scale of 1-5, (with 1 being Not at all confident and 5 being Extremely confident), please rate how confident you were in your ability to accomplish the following BEFORE and AFTER the Health Disparities Curriculum was implemented for each item in the table below:
(Not at all confident=1, Slightly confident=2, Moderately confident=3, Very confident=4, Extremely confident=5

		Before Implementation of the Health Disparities Curriculum	**After Implementation** of the Health Disparities Curriculum
a)	Identify the historical, social, and political context of health and health care disparities.		
b)	Identify the relationship between race, ethnicity, socioeconomic status, socioeconomic inequality, and health disparities/health care disparities.		
c)	Identify your specialty specific policies, and strategies to address health and health care disparities.		
d)	Identify individual, interpersonal, organizational, community and systemic factors influencing health and health care disparities.		
e)	Identify and address health and health care disparities within the populations served by you/your practice.		

The activities, training resources and didactics in the Health Disparities Curriculum made me more aware about my implicit biases.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The activities, training resources and didactics in the Health Disparities Curriculum made me more aware about cultural competency/cultural humility as an effective way to reduce disparities.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The activities, training resources and didactics in the Health Disparities Curriculum made me more aware about the social determinants of equity including systemic/structural racism as the forces that create the contexts (social determinants of health) as the factors responsible for perpetuation of health and health care disparities.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The activities, training resources and didactics in the Health Disparities Curriculum made me more inclined to incorporate skills learned on cultural humility in my daily clinical encounters.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The activities, resources and didactics in the Health Disparities Curriculum made me more aware about patient perceptions, physician perceptions and systemic factors that affect the quality of care.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

As a result of Health Disparities Curriculum, do you think that you and other residents in the program are: (Check all that apply)

- having more discussions on disparities, social determinants of health with faculty and peers
- are focusing on health disparities, SDOH during case discussions
- have developed/thinking to develop scholarly activity focused on disparities
- have volunteered/ would be volunteering at any community organization(s)
- have collaborated/would be collaborating with community organization(s) to address a health issue

Overall, I think the content of the Health Disparities Curriculum was useful to me as a physician in addressing health and health care disparities.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Overall, I am satisfied with the quality of didactic sessions, screenings, and population health workshops within the Health Disparities Curriculum.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Please describe the most useful content that you have learned in the Health Disparities Curriculum.

APPENDIX B

Frequency Analysis for Context, Process and Product Evaluation

Table B1

Frequency analysis for Health Disparities Curriculum meeting its stated goals in context evaluation

Question	Disagree		Neutral		Agree		Total
	n	%	n	%	n	%	
The Health Disparities Curriculum provided education disparities and influencing factors	1	0.8	12	9.2	117	90.0	130
The Health Disparities Curriculum addressed issues in the context of SDOH	-	-	9	6.9	121	93.1	130
The Health Disparities Curriculum described the physicians' role as leaders to achieve health equity and social change	3	2.3	15	11.5	112	86.2	130
The Health Disparities Curriculum provided information on local needs and resources and initiatives by hospital systems.	4	3.1	20	15.4	106	81.5	130
The Health Disparities Curriculum provided specialty-specific strategic and research directives, and policies	9	6.2	29	22.3	92	70.8	129

Table B2

Frequency analysis for the session relevance questions in the process evaluation

Question	Disagree		Neutral		Agree		Total
	n	%	n	%	n	%	
The content in the didactic sessions were relevant to me as a physician	4	3.1	22	16.9	102	78.5	128
The population health workshops were relevant to me as a physician	0	0	29	22.3	91	70.0	120
The video screening sessions were relevant to me as a physician	1	0.8	37	28.5	81	62.3	119

Table B3

Frequency analysis for instructor's competence questions in process evaluation

Question	**Disagree**		**Neutral**		**Agree**		**Total**
	n	%	n	%	n	%	
Instructor was knowledgeable	0	0	8	6.2	119	91.5	127
Instructor delivered the material in organized and structured manner	4	3.1	6	4.6	117	90.0	127
Instructor answered questions effectively	1	0.8	9	6.9	117	90.0	127
Instructor was approachable and willing to help	1	0.8	9	6.9	115	88.5	125

Table B4

Frequency analysis for the review of learning resources in process evaluation

Question	Disagree		Neutral		Agree		Total
	n	%	n	%	n	%	
I review the reading materials, training links and/or videos shared as learning resources after the lecture.	38	29.2	30	23.1	59	45.4	128

Table B5

Frequency analysis for the awareness among medical residents in product evaluation

Question	**Disagree**		**Neutral**		**Agree**		**Total**
	n	%	n	%	n	%	
The activities, training resources and didactics in the health disparities curriculum made me more aware about my implicit biases	8	6.2	21	16.2	94	72.3	123
The activities, training resources and didactics in the health disparities curriculum made me more aware about cultural competency/cultural humility as an effective way to reduce disparities	3	2.3	18	13.8	102	78.5	123
The activities, training resources and didactics in the health disparities curriculum made me more aware about the social determinants of equity including systemic and structural racism as the forces that create the social determinants of health as factors responsible for perpetuation of health and health care disparities	2	1.5	19	14.6	102	78.5	123
The activities, training resources and didactics in the health disparities curriculum made me more aware about patient perceptions, physician perceptions and systemic factors that affect quality of care.	2	1.5	19	14.6	102	78.5	123

Table B6

Frequency analysis for the inclination to incorporate cultural humility in daily encounters in product evaluation

Question	Disagree		Neutral		Agree		Total
	n	%	n	%	n	%	
The activities, training resources and didactics in the Health Disparities Curriculum made me more inclined to incorporate skills learned on cultural humility in my daily clinical encounters	2	1.5	21	16.2	100	76.9	123

Table B7

Frequency analysis for the engagement of medical residents on disparities in product evaluation

As a result of the health disparities curriculum, do you think you and other residents in the program are:	Yes		No		Total
	n	%	n	%	n
a) Having more discussions on disparities, social determinants of health with faculty and peers	82	63.1	22	16.3	110
b) Are focusing on health disparities, SDOH during case discussions	43	33.1	61	46.9	104
c) Have developed/thinking to develop scholarly activity focused on disparities	30	23.1	74	56.9	104
d) Have volunteered/would be volunteering at any community organization(s)	23	17.7	81	62.3	104
e) Have collaborated/would be collaborating with community organization(s) to address a health issue	23	17.7	87	66.9	100

Table B8

Frequency analysis for the Curriculum Utility on product evaluation

Question	**Disagree**		**Neutral**		**Agree**		**Total**
	n	%	n	%	n	%	
The content of the health disparities curriculum met my expectations	5	3.8	28	21.5	95	73.1	128
Overall, I would rate the health disparities curriculum as an excellent source of information	3	2.3	25	19.2	100	76.9	128
Overall, I think the content of the health disparities curriculum was useful to me as a physician in addressing health and health care disparities	2	1.5	30	23.1	91	70.0	123
Overall, I am satisfied with the quality of didactic sessions, screenings, and population health workshops within the health disparities curriculum	3	2.3	22	16.9	98	75.4	123