



Physicians, prescribe education to address population health equity

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ARTICLE INFO

Keywords:

Health equity
Management
Educational attainment
Prescribing education
Social determinants of health

ABSTRACT

Structural barriers embedded within American society contribute to health inequities and social determinants of health (SDOH) in ways that systematically influence one's ability to succeed and to maintain a healthy overall quality of life in the United States. This article leverages educational attainment as an upstream SDOH factor that can be used to address downstream implications of population health equity. As providers learn to prescribe more innovative treatments that directly influence SDOH, an exploration is made to develop an intervention that integrates education, public health, and medicine as systems in a coordinated process to increase educational attainment for vulnerable populations.

This article develops and analyzes the use of health equity management (HEM) model as a conceptual framework to identify precursors for educational attainment and provide an equitable solution for mending the educational attainment gap. It provides theoretical framing, conceptualizes stakeholder engagement, and creates a conceptual framework for identifying and addressing population health issues with education prescriptions.

Operationalizing an educational prescription intervention will utilize provider-based screening methods to decrease the gaps in educational attainment by fostering partnerships between education, public health, and medicine. HEM identifies ideal partnership relationships to increase educational attainment and address long-standing quality of life issues, with a primary focus on coordinated activities among systems.

Incorporating provider expertise into upstream educational decision-making legitimizes educational attainment as a critical component of population health equity. For many Americans, this is a necessary call to action to demand real structural change to ensure prosperity for all. An educational prescription intervention is a step towards increasing population health equity.

1. Introduction

The education and health tolls of being a racialized and ethnically disadvantaged American reduces the American dream of prosperity to an impossibility. And unfortunately, access to quality health care and education are basic needs that are not met for all individuals. Despite the scientific gains in medicine, reforms in healthcare delivery, and the impact of other industry innovation pouring into healthcare, many Americans still experience adverse health outcomes as the result of their race, income, and education levels. These social determinants of health encompass a wide range of upstream and downstream components. They include complex issues related to notions such as built environments, redlining, and food insecurity. These issues become population health drivers in urban and rural communities, and even more specific stratifications such as youth or people of color. To ensure that every

American has a chance for prosperity, the systems of care that include medicine, education, and public health must rethink their coordinated relationships.

The constant, systemic exclusion from educational resources is thought to contribute to several research-supported issues that are directly and indirectly connected to social determinants of health and health equity. In many ways, health and education are inextricably linked, with good health an ideal comparison to a good education (Howard et al., 2015; Woolf and Braveman, 2011). Disenfranchisement and low standards of achievement are often the first terms used to explain the educational inadequacies related to social determinants of health with disadvantaged populations. The educated and financially stable populous view the healthcare system as functioning well for their needs with minor areas for improvement, while those with low income remain worried about health care-related issues and medical spending

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<https://doi.org/10.1016/j.pmedr.2022.101950>

Received 30 January 2022; Received in revised form 6 August 2022; Accepted 10 August 2022

Available online 17 August 2022

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when interacting with the same system (Watch and Opinion, 2011). This dichotomy paints a picture of concern for prosperity in the sense of good health, quality of life, and the impact of educational attainment on population health.

In the United States, those who attain higher levels of education are less likely to need or use public assistance programs (Blagg and Blom, 2018). State and local governments would save \$34,773 per person who achieved a college education (Trostel, 2008). Comparatively, 26 % of those who only complete a high school education will use food stamps and Medicaid, versus only 6 % of those with a bachelor's degree. The gap between public assistance usage becomes even wider when comparing master's level education with less than a high school degree or only a high school degree (Blagg and Blom, 2018). Increases in education levels are associated with crime reduction and levels of unemployment. High levels of education attainment are directly linked to crime reduction which will lead to ability to reduce spending on incarceration (Lochner and Moretti, 2004). The return on investment for increasing access to quality education is not only clear on the individual level but also on the macro-level for overall improvement and well-being of our society.

Considering the impact that education, an upstream social determinant of health, has on population health outcomes, it is imperative to create a more prescribed structure between public health, higher education, and medicine to address adverse health outcomes in vulnerable populations. An environmental scan is used to address the imperative to raise the value of education in healthcare to a level in which its absence is directly related to health outcomes. As a result, when health disparities and health equity issues exist in a population, the ideal solutions will include an educational prescription intervention to address population health outcomes. The author has developed an applied theoretical model called health equity management that shows how organizations can use modeling to effectively coordinate the proposed intervention.

2. Background

The strong association between education and health outcomes requires an understanding of the confluence of the public health and medical delivery systems. The intersectionality of education and health is best captured in the associations found in social determinants of health. The first galvanizing term to help with this notion is educational attainment. In this way, educational attainment is a function of literacy, and is characterized by health literacy research (Berkman et al., 2020; Friis et al., 2016). Health literacy has been used to describe the connected topics of educational attainment and mortality, educational attainment and quality of life, and parental education and child health outcomes (Declaration of Alma-Ata, 2008).

The implications of bad health and education play out in irreparable ways when noting the connections between higher rates of deaths, educational attainment, and health literacy. For example, educational attainment is inversely associated with lifetime cardiovascular disease, regardless of other important socioeconomic characteristics (Kubota et al., 2017). Low educational attainment is also associated with increased stroke risk in men and women, and may be marginally steeper in women than men, with modifiable risk factors accounting for much of the excess risk from low education level (Jackson et al., 2018). To analyze the strength of association between health and education, a scan of structural racism and mortality literatures connected to educational attainment shed light on the potential to address deleterious health issues.

2.1. Structural racism in education

In healthcare management, the structure of the delivery system and the behaviors of providers and practitioners are the major cause of health disparities (Gomes and McGuire, 2001; Health Equity, 2017). For every disparity noted between two racially differentiated populations, the causality stems from two structural components: the operations of

the healthcare system and the discrimination that stems from individual bias, stereotyping, and uncertainty that generate inequitable actions.

From a management perspective, healthcare and education have infrastructures that can be characterized similarly when trying to understand population health outcomes. Much like healthcare management deploys a set of practices to address and dismantle health disparities, educational management can apply the same logics to address and dismantle structural racism. The major stakeholders in healthcare include patients, providers, payors, and systems. In education, students can be characterized as patients. Teachers are like providers. Schools are idealized as hospitals. The organization of school districts and higher education institutions are like health systems and healthcare organizations models. Even the financial payor systems are equally complex with a mix between public and private resources.

Structural racism reduces educational attainment in a similar conceptual framing as that of health disparities. Structural racism is defined as a system in which public policies, institutional practices, cultural representations, and other norms work in various, often reinforcing ways to perpetuate racial group inequity (Jonker et al., 2021). For educational success, this creates a gap that is characterized by comparing educational resource spending, class sizes, schools' size, curricula rigor, and teacher qualifications (Darling-Hammond, 1998; Sunderman and Kim, 2005; Partee, 2014). Such gaps inevitably impact educational attainment and transform the American dream into a cycle of poverty and poor health.

Education levels are strong predictors of other quality of life indicators like environment and income. Those with lower levels of education such as only high school diplomas are more likely to lack access to health insurance, employment opportunities, and disposable incomes. Lower income students continue to have additional uphill battles that contribute to the disparity in educational attainment (Kozol, 2012; Nichols and Degree, 2017). Black and Hispanic families earn only two-thirds of the income in comparison to White families (Woolf and Braveman, 2011). Furthermore, in college and beyond, lower income students are forced to finance approximately 157 % of their familial income in comparison to higher income students, who only need to finance 14 % of their family income. (Fischer, 2019).

2.2. Educational attainment and mortality

When assessing educational attainment and life expectancy by race, there are drastic differences between racial groups, which has roots in the phrase "two Americas" (Olshansky, et al., 2012; Hummer and Hernandez, 2013). In one America, adverse health outcomes are one of the many by-products of low educational attainment, leaving poorly educated people to live a lower quality life. Mortality due to low education levels and other social determinants of health in the United States were analogous to mortality numbers from myocardial infarction, cerebrovascular disease, and lung cancer in 2000 (Braveman and Gottlieb, 2014).

Analyzing and comparing the overall quality of life amongst poorly educated people in comparison to highly educated people portray a greater picture of education as a health determinant factor. Those with higher levels of education are more likely to garner resources like income and healthy food, which increase access to quality healthcare and reduce health risk (Montez and Barnes, 2015). Diabetes, another chronic disease condition, is generally associated with lower education levels (Hahn and Truman, 2015). Those with higher levels of education have the economic means to utilize resources such as gym memberships diminish one's chances of developing a chronic disease condition and decrease stressors that can impact a person's quality of life. The literature demonstrates that those with higher levels of education have more autonomy over their life and have easier access to social mobility that improves overall quality of life.

Furthermore, research demonstrates that familial education patterns are correlated with educational attainment and health outcomes. Those

from lower-income backgrounds with a college degree had comparable low levels of physical impairment to that of individuals who were born into higher socio-economic background (Ross and Mirowsky, 1982). These findings reflect the influence education has on other social determinants of health. There is a trickle-down effect between parental education and social and occupational status, which affects access to quality healthcare. Despite growing up in a lower-income home, individuals who were able to increase their education level improved their health outcomes and reduced any adverse health effects from growing up in a home with less-educated parents.

3. Methodology

The background provides a summary of the strength of the association between health and education. As disciplines, both health and education literatures rely on the other in a manner of speaking to solve the larger problem of health disparities and health equity. To address these issues, creating a more prescribed relationship between public health, higher education, and medicine is proposed to address adverse health outcomes in vulnerable populations. As these literatures are fused, the challenge quickly arises to identify a connecting framework for analysis.

The argument for an educational prescription intervention includes coordination and management of several stakeholders and systems. As a result, an environmental scan was chosen as the best approach to frame each stakeholder in context of their contributions to social determinants of health, namely educational attainment, and population health outcomes for vulnerable populations. Prescribing education becomes a coordinated intervention that can be managed in ways like other healthcare management initiatives. The process of prescribing education gives the framework the power to assign each stakeholder a level of accountability towards educational attainment and better population health. It will strategically coordinate the steps necessary to coordinate stakeholders' action associated with education attainment that increases health outcome – and ultimately prosperity.

Prescribing education is an approach that provides theoretical framing to create the connecting framework. As an intervention it then draws upon these theories to conceptualize the process for engaging stakeholder systems, creating a conceptual map for identifying and treating proper populations with education prescriptions. Last, prescribing education uses an applied theoretical model, Health Equity Management, to provide a call to action for future recommendations. The implementation of this intervention will not only increase educational attainment but most importantly, health equity through the increase in coordinated partnerships between public health, medicine, and education.

3.1. Theoretical framing

To frame action towards an educational prescription intervention as a solution for educational attainment and increasing the life expectancy

of low-income populations, it is first important to consider the explanatory power and limitation of two existing non-intersecting frames, the Health Belief Model (HBM), and Critical Race Theory (CRT) on existing practices. Much like the dichotomy of health and education throughout this scan, HBM is rooted in health and CRT is rooted in education. And over time, there has been increased and continuing engagement with public health and education theories. Comparing them to existing theories of healthcare management, namely institutional theory and health equity management, show the challenges and limitations of applying health equity to multifaceted issues.

These frameworks are used to explain the various capacities in which the education prescription intervention addresses the issue of low educational attainment through a partnership between public health, medicine, and education. Fig. 1 represents the integration of these theoretical frameworks to demonstrate the reasoning behind the education prescription and how the call to action will be executed.

3.2. Existing model limitations

The Health Belief Model (HBM) has been used traditionally to identify the factors that impede a patient's ability to integrate health behavior changes into their daily life to develop an intervention that produces a desired change. Our intervention utilizes HBM to highlight factors that inhibit the target population from high levels of education attainment and quality of life. Barriers that impede our target population are lack of resources within their school, lack of quality educators, and residential segregation fosters poor health which stem from systematic discrimination.

A departure from HBM, Critical Race Theory (CRT) allows for a deeper assessment of these barriers, as CRT dissects layers of racial inequality in the United States and its impact on educational attainment for disenfranchised adolescents. CRT has been controversial in its direct implication, but for healthcare it adds value to explain how race and racial discrimination create educational inequities. The history of race-based policies in the United States along with the lack of resources in their built environments and face implicit bias within the education system (Ladson-Billings and Tate, 2020; Cokley, 2019).

Two healthcare management theories that lend themselves to this discussion are institutional theory (InT) and the systems thinking perspective (STP). In InT, both organizations and individuals are equally able to serve as institutional entrepreneurs actively participating in regulatory change implementation processes. Healthcare leaders must provide a convincing reason and present the contextual dynamics needed for organizational and environmental adaptation that challenge normative standards and ideals to elicit buy-in (Hinings et al., 2004; Breton et al., 2014).

Taking a STP approach supports strengthening health equity initiatives in the health system using managerial practices. In this way, social determinants of health issues could be used to design and evaluate interventions to effectively maximize healthcare options and equity in a

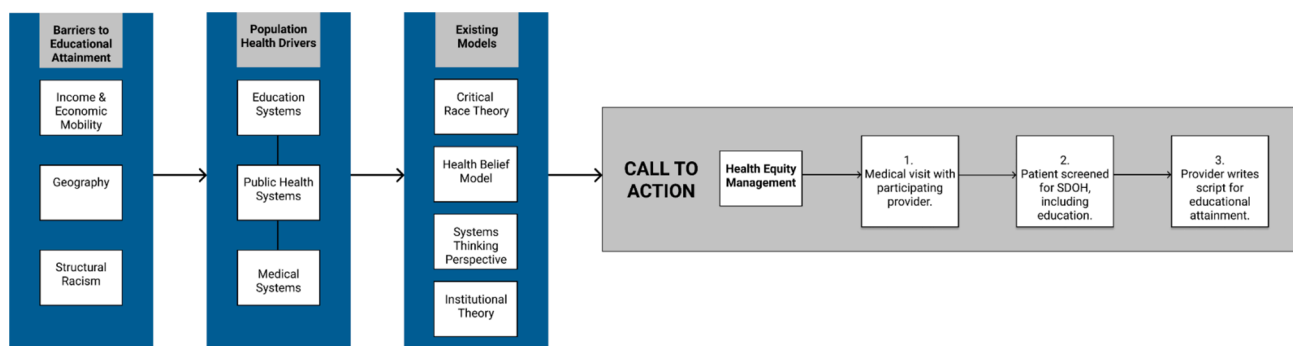


Fig. 1. Conceptual Framework.

complex, real-world setting (De Savigny and Adam, 2009). STP is an ideal framing because it most closely draws from InT and provides a rationale for healthcare organizations to conform to mimetic isomorphism as a safe and beneficial option to implement health equity practices (Kapp et al., 2017; Breton et al., 2014).

3.3. Using a health equity management model

Each of these existing models lay the foundation for a “call to action” that catalyzes a departure from HBM and CRT into the managerial realm. Also, departures from InT and STP are necessary because little if any use is directed towards addressing health equity or with investments in vulnerable populations. The pragmatic socioeconomic perspective is missing when merging the best practices from each of these existing theories. Here, we use the Health Equity Management Model (HEM) as a galvanizing theoretical framework that can be used to coordinate what is considered a multifaceted applied action in an educational prescription intervention to create successful managerial initiatives in health equity (Dotson, 2019).

HEM (Fig. 2) has been used in healthcare to help organizations refocus investments in health equity. As a management tool it is framed to assess, score and scale interventions that will close health care disparity gaps through intentionality using an “inclusive” planning model. HEM redefines health equity in action, reframes existing health management theory, addresses costs for health inequities, and strengthens public and private partnerships (Dotson, 2020). An education prescription has the potential to reduce overall expenditures on medical care by addressing the educational disparity head on. HEM differs greatly from existing models as all previous models search equitable outcomes via addition to largely existing frameworks that are plagued and beleaguered by the intransigence of incrementalism building upon institutionalized well-intentioned but often racist constructs.

For example, HEM better explains why the eradication of health disparities that resulted in premature deaths and illness would have totaled more than one trillion dollars in the LaVeist 2003–2006 study. The team’s explanation of direct drivers of healthcare expenditures as the premature deaths and illness within communities of color are captured in the model’s cost and partnership dimensions (LaVeist et al., 2011). These numbers provide some context to the argument why radical social justice initiatives are needed for the betterment of society. They hint at an association of how the costs of life loss limit the overall prosperity of American society.

Due to the economic impact of social determinants of health-on-health outcomes, the public and private partnerships are innovatively crucial in the success of the notion to prescribe education. Currently,

health systems and health providers are directing their focus to addressing social determinants of health through screening methods and point-of-diagnosis education interventions (Andermann, 2018). An education prescription provides the infrastructure for the physician to be a preventive care advocate for their patient. By strengthening partnerships, physicians would be able to actualize an education prescription and play a key role in reducing the impact of low educational attainment and health outcomes from an upstream perspective. Physicians are integral for the success of an education prescription, as they would be writing a prescription for someone to obtain higher education. An HEM-based intervention has the potential to increase health equity while decreasing the healthcare spending expenditure by providing at risk populations with a direct line to an associate’s or bachelor’s degree that will increase their health outcomes. The premise of health equity is that every-one should have the chance to “attain their full health potential and that no one should be disadvantaged from achieving this potential.” (World Health Organization, 2017; Braveman et al., 2011). The implementation of this intervention will strengthen the partnership between the health system and education system, requiring both entities to work in tandem to change the context for underserved communities thus achieving health equity. Using the Health Equity Management Framework for the integration of this call to action, an education prescription will lead to an improved quality of life that underserved populations deserve.

4. Discussion

Drawing from healthcare best practices models which interpret prescriptions more expansively, this paper calls for the need of an educational prescription program. The innovation contained within the HEM framework is proposed to decrease the gaps in educational attainment by fostering partnerships between patients, physicians, and the education system. If followed, it creates opportunities for physicians to help screen their patient for social determinants of health with a primary focus on educational deficiencies. Whereas physicians are traditionally known for writing prescriptions and referrals for pharmaceuticals and other forms of medical outpatient and inpatient care, the implementation of the education prescription, can create an increased role with the ability to write special prescriptions for educational attainment.

The HEM Model approach brings together stakeholders that typically work in silos to implement a collaborative and substantive solution. Operationalizing this process takes coordination among key partnerships.

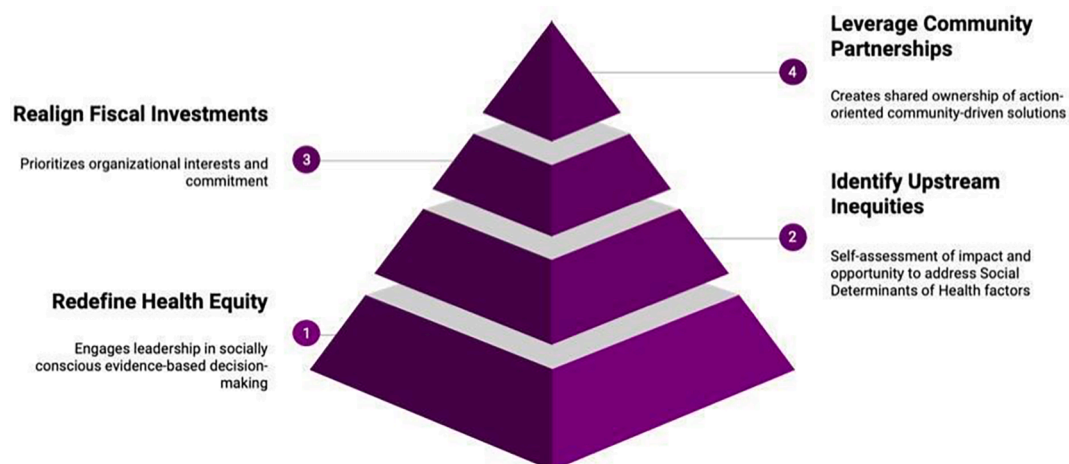


Fig. 2. Health Equity Management Model.

4.1. Operationalizing the education prescription intervention

Following management practices, an idealized pathway for increased educational attainment through an educational prescription would begin with a three-step process: establishing the partnership and operational commitment, building a clinical flow, and providing coordinated resources communications and messaging support.

4.1.1. Establishing the partnership and internal operations

To implement the education prescription, the health system must first establish a relationship with local educational institutions, in particular public universities, and community colleges. These institutions are more affordable, have lower barriers to admission, and cater to commuting students and non-traditional students. Together the educational institution of choice and the health system must determine which degree(s) would be covered under an education prescription (such as an associate degree, or bachelor's). Admissions criteria must also be carefully designed to remove barriers to admissions.

The institutions together must establish the patient and student cycle of operations. This entails program managers at the health system and the educational institution and an agreed flow for how the patient "fills" the prescription. The patient should be able to take the prescription and institution from the provider, and set up a virtual, telephone, or in-person meeting with the institution's admissions office to fill the prescription. This first meeting should involve filling key enrollment steps, to lower the likelihood of the patient and future student from disengaging in the process.

Barriers patients may experience in completing the educational program must also be carefully considered and addressed. Options such as remote and virtual learning, early morning and evening classes, tutoring, language translation and support services must be considered in selecting a partner, as these are options that patients may need. Physical access must also be a consideration for selecting a partner: institutions located near bus routes and with ample affordable parking may prove better partners for this initiative than institutions located in remote areas or with limited (and expensive) parking.

The funding mechanism for this initiative is key. If patients are fully responsible for the cost of the education, completion likely will fail. Health systems should consider direct investments and engaging with local foundations towards covering costs of the initiative, as well as a sliding scale model where costs could be shared with patients depending on income.

4.1.2. Establishing the patient and clinical flow

First, each patient at the health system must undergo a social determinant of health screening, where they would need to identify their education level. This screening should occur in line with any other screenings and tests that patients regularly undergo at a new patient appointment, a follow-up, or as requested by a provider or case manager. Registrars, social workers, and any other staff involved in collecting such data must be trained on how to ensure patients provide education information. Any online registrations or screenings that patients conduct within their electronic health portal must also include messaging to encourage full completion of this data.

Next, data analysis would need to compare the screening, demographic data of the patient, and clinical information. Through this analysis and appointment with the primary care provider, the provider must identify what criteria the patient meets (or doesn't meet) that indicates a need for an education prescription. When the provider makes the prescription, the patient should receive a brief orientation to the program, an informational packet, and be provided ample time to ask questions. This information should be available in a variety of languages.

After the patient receives the prescription, they need to then fill the prescription. The provider can either connect the patient to the relevant program manager or coordinator at the health system or connect them

directly to the relevant program manager at the partnering educational institution. Importantly, connections should be made at the point of care, so the patient has crucial next steps completed before even leaving the office. To fill the education prescription, where patients can perhaps attend community college or four-year universities, colleges and universities will need to work with providers. We see a natural fit with educational institutions already offering free tuition to lower income students. As a process, these colleges and universities often have strong infrastructures for support services and integrating bridging programs.

Lastly, the health system needs to engage a process to follow up with patients and ensure filling of the prescription. After the patient fills the prescription and embarks on their educational journey, the health system and education system must regularly share data and conduct process and outcome evaluations. Evaluating the process identifies opportunities to refine the intervention at points of the prescription and filling the prescription. An outcome and program evaluation will address patient experience throughout their education, success of the program in addressing health outcomes, and will support refinement of the initiative over time.

A communications and messaging strategy is crucial to this intervention. Such communication & messaging should be culturally relevant and effective, and clearly address the value proposition for the program. In addition, providers and any other staff involved in the education prescription should undergo training (such as motivational interviewing) to support patients in understanding the need and value for an education prescription.

The goal of modeling this prescription process through HEM is to change the overall life trajectory of vulnerable populations experiencing the ills of health inequity. Providing an education prescription for the most vulnerable will not only result in a higher education degree, but more importantly increases community level economics and health outcomes.

4.2. Drawing from best practices models

The Affordable Care Act has ushered in several initiatives aimed at addressing social determinants of health. As a result of its provisions, there has been an uptake in health system involvement in improving social determinants of health as it is both good business practice and improves patient outcomes. The health systems are investing in affordable housing and patient-centered care now includes health literacy programs ([UnitedHealthcare's Investments in Affordable Housing to Help People Achieve Better Health Surpass \\$400 Million, 2019](#); [UPMC, 2019](#); [Bresnick, 2019](#)). Prescription programs are expanding into nutrition to combat chronic diseases like heart disease or diabetes in lower income patients ([New Wave, 2020](#); [For, 2018](#)). As this article suggests innovation in prescribing, one of the closest practices to our intervention involves social determinants of health referral programs. Two models demonstrate the physician's ability to play a more active role decreasing the burden of social determinants of health for their patients, the Ambulatory Integration of Medical and Social (AIM) and the WE CARE model ([Herrera et al., 2019](#); [The, 2018](#)).

In addition, there are inequities in the system and some universities and community colleges have implemented programs to decrease the gap and reduce the barriers to obtaining post-secondary education. Wolverine Pathways is a college readiness program, created by the University of Michigan, that recruits 7th-12th grade students from the Detroit and Ypsilanti area ([Larochelle, 2020](#)). Joining the University of Michigan in the fight to increase educational success, other universities such as Wayne State University, and states like Tennessee will offer free tuition and coverage of mandatory fees to all students that graduate from local and state schools ([Carruthers, 2019](#); [Wayne State University, 2019](#)).

5. Implications

The implementation of an educational prescription intervention can change the generational life expectancy trajectory for communities of color. Recent national and international events such as the 2014 Flint Water Crisis of 2014, the 2020 COVID-19 pandemic, and even the 2021 Black Lives Matter Movement against police violence affect life expectancy of communities of color in an unnerving statistical fashion. Nevertheless, we must continue to develop feasible solutions and innovations to combat the unyielding torment on these communities. HEM directly addresses the cultural barriers and stakeholder coordination issues that often limit effectiveness of health equity initiatives.

Targeting providers, and more specifically physicians, is both strategic and risky. It cannot be underscored enough to note an efficacious outcome is strongly dependent upon physician buy in. Whereas educational systems thrive off student growth, it is important to acknowledge that providers' capacity to engage can be limited by existing time and task constraints. This type of additional responsibility on the heels of so many, medicalized issues in the world may prove to be too much for providers. But what we argue is that HEM framing of educational attainment allows for better integration of action into the existing role of the physician and their normal practices, including adding organizational capacity for health equity initiatives.

6. Conclusion

On paper, educational attainment is portrayed to be a direct line to success, health, and happiness in the United States. In practice, those lines are blurred, and the blurriness of those lines contributes to ongoing adverse health outcomes and low rates of life expectancy for underserved populations around the country. Health and education are inherently linked because high levels of education increase the chances of being in healthy social circles, having access to healthcare, healthy foods, better mechanisms for coping with stress, and a job that will sustain a healthy lifestyle. The attempt to use applied theoretical modeling such as HEM modeling pushes the bar and breaks the status quo by encouraging greater collaboration between public health professionals, providers and administrators in healthcare systems, and the instructors and administrators in the education system.

Prescribing education will create a pathway for systematic improvement in the quality of life for individuals with low educational attainment prospects, help reduce healthcare costs by increasing health literacy, and have a positive impact on society by creating more economic opportunities within communities. HEM is not the only solution for this, but the theoretical concept is a necessary call to action to demand real structural change and stronger coordination among public health, medicine, and education systems toward a life of prosperity for all. This paper calls on healthcare professionals, healthcare systems, and the education systems to step up and step in for our nation's most vulnerable patients so that institutionalized systemic practices that result in disparate outcomes for certain communities will no longer hold weight in this country.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRedit authorship contribution statement

Ebbin Dotson: Conceptualization, Methodology, Writing – review & editing, Supervision, Investigation. **Kyra Freeman:** Conceptualization, Writing – original draft. **Elisabeth Michel:** Writing – review & editing, Project administration, Visualization. **Micah Young:** Conceptualization, Investigation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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