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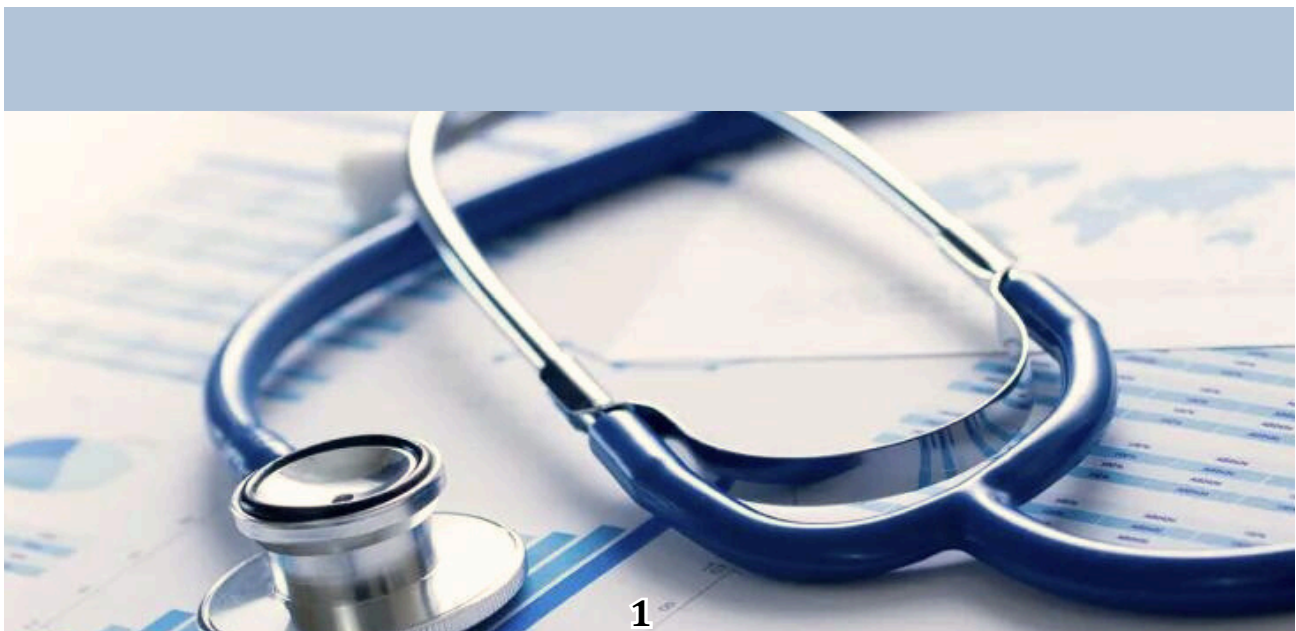
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ECONOMIC FORCES AND MEDICAL CARE

A Sociological Examination of the Business Dynamics in Healthcare and the Shaping of Health Policy

RITZ BATTULA

Abstract: Financial health should be identified as a measurable social determinant of health. Patients suffer from preventable adverse health effects due to financial strain sourced from insurance coverage and high out-of-pocket medical expenses. Doctors often face various financial difficulties regarding their student debts, loans, retirement plans, and savings. Medical professional burnout and shortages are increasing expeditiously. Collecting patient financial responsibility is an important part of the healthcare revenue cycle. Making medical billing less complicated and more patient-oriented can help both healthcare organizations and patients. Creating incentives for medical professionals to work in rural areas is also necessary to ensure more people get the medical care they need. Lastly, investing in business healthcare leaders will bring new and innovative ideas to the table, ultimately bettering the U.S. healthcare system.



“I think the biggest problem with healthcare today is not its cost – which is a big problem – but for all that money, it’s not an expression of our humanity,”

said Jonathan Bush, co-founder, and former CEO of Athenahealth, a healthcare technology company. There is much injustice in our healthcare system. More research, discussions, and actions must be done to find solutions to the root causes of these issues. Business and medicine have and will always continue to play a collaborative role in the healthcare system and the lives of every individual in these fields. Individually and together, these spheres contribute to a variety of issues and solutions in our society. Finance, management, and policies surrounding healthcare will be discussed and prove a strong correlation between business, healthcare, and sociological impacts.

“Financial Health as a Measurable Social Determinant of Health ” by Weida and other authors discovered a strong association between health outcomes and financial health. Although socioeconomic status has been defined as a social determinant of health, the way it has been examined is confined to income related to poverty, housing, food insecurity, and other basic needs. Ways to improve financial capability are not well-researched. “Financial health is a comprehensive assessment of finances that includes the ability to support meeting basic needs, which also encompasses opportunities to save and build wealth” (Weida, et al., 2020, para. 1). Several studies have analyzed the link between health and financial literacy, along with financial stress and health outcomes, both physical and mental.

Furthermore, researchers have found a strong correlation between financial distress and well-being and observed mental and physical health outcomes. These studies discuss financial health outside the area of public health and do not find or create solutions to the issue (Weida, et al., 2020, para. 2). This paper introduces financial health within the domain of public health, assessing more than just individual data of economic hardship.

Survey data and personal finances among child caregivers who have public assistance were analyzed, and logistic regressions were then used to assess the relationship between mental, self-related, and financial health (Weida, et al., 2020,

para. 5). The study concludes that “behavior and planning indicate more of a family’s ability to be financially ‘healthy’ and have better physical and mental health outcomes than other individual measures of income poverty such as housing/food insecurity or income level” (Weida, et al., 2020, para. 16). Weida suggests reducing health disparities, creating opportunities for socially and financially marginalized people to develop their wealth, which ultimately promotes the wellbeing of those individuals (Weida, et al., 2020, para. 22). This article successfully shows that financial health is a social determinant of health and must be consistently analyzed in the public health sector to a greater extent.

“Paying for Health Care” by Bodenheimer and Grumbach sheds light on the various modes of paying for healthcare and the financial burdens it brings on individuals. 13% of the US population is uninsured, which means they have to pay out-of-pocket for any medical care they may need (Bodenheimer and Grumbach, 2016, para.17). Although 13% may seem small, that is about 43 million people in the U.S. who are not insured. People typically do not know if or when they become ill, let alone what treatment they may need. They may simply need ibuprofen and on other occasions, an MRI. People are not prepared for the drastic financial burdens these uncertainties may cause. 7% of the US population uses private insurance companies (Bodenheimer and Grumbach, 2016, para. 24). This is when a person pays an insurance company, which then covers the medical and hospital bills. Insurance companies could refuse coverage of pre-existing conditions, including asthma and cancer until the Affordable Care Act (ACA) was put into place. The ACA ensures that those with and without health conditions are treated equally in terms of affordability, access, and fairness of coverage. 47% of the US population has employment-based private insurance, and 33% have government financing (Bodenheimer and Grumbach, 2016, para. 51). Although these together account for most of the population, it still comes with various patient financial challenges.



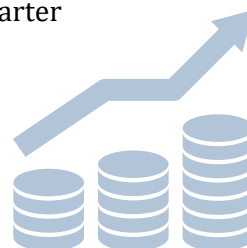
Some consequences of decreasing health insurance coverage include financial burden on uninsured and underinsured individuals, poor quality of care, avoidable mortality, inequities in healthcare access, and lost economic productivity (Davis, 2007, para.1). Gaps in health coverage are primarily due to the underuse of services, leading to even greater adverse health issues that could be easily preventable. Uninsured or underinsured people are twice as likely to not address their medical needs with healthcare professionals. When they do receive care, they spend a lot of money out-of-pocket. Uninsured individuals do not receive any discounts for their medical expenses, further increasing their debt burdens and access barriers (Davis, 2007, para. 6). Uninsured individuals have reported receiving poorer quality care, and chronic conditions are unlikely to be managed properly. For example, emergency room use, and inpatient hospital care are twice as high for uninsured individuals with chronic conditions. (Davis, 2007, para. 7). Additionally, low-income and uninsured people are more likely to receive less well-coordinated medical care. These individuals report receiving duplicate tests than insured individuals and often experience delays in important notifications, such as test results. Furthermore, their medical records are less likely to be accessible when they receive medical care (Davis, 2007, para. 8). The treatment that uninsured and underinsured patients undergo should not occur in the medical field, especially without support for the financial burdens they are dealing with.



Collecting patient financial responsibility is a big part of the healthcare revenue cycle. Although healthcare organizations aim to create a clear and simple way of collecting payments, patient billing is easier said than done because out-of-pocket costs are continuing to rise (Heath, 2017, para. 2). 90% of people chose a high-deductible health plan in the 2016 open enrollment period. This plan has lower premiums but charges more when patients actually access the healthcare system. This puts patients

in a state of shock when they receive their bills. Consequently, these higher medical bills make it harder for patients to pay and healthcare organizations to collect (Heath, 2017, para. 4). According to a Navicure survey in 2016, only 42% of healthcare organizations offered a cost estimate prior to an appointment (Heath, 2017, para. 5). Price transparency is something that the healthcare industry often misses, which leads to patients being in shock when they see their medical bills. 25% of patients have skipped treatments or follow-up appointments because of high costs (Heath, 2017, para. 27). Usually, patient bill issues are due to unaffordable medical bills, which negatively affects healthcare revenue cycles (Heath, 2017, para. 24). A 2016 survey by Porter research found that 67% of patients are unclear of how much they need to pay versus how much their insurance will cover (Heath, 2017, para. 13). Further, 62% of healthcare organizations do not have electronic credit card payments, 52% do not have automatic payments, and 57% do not send electronic receipts to patients (Heath, 2017, para. 19). This not only makes it harder for patients to understand how to pay their bills but also harder for healthcare organizations to stay organized. Clinics, practices, and hospitals cannot afford to be at a disadvantage due to inefficient billing processes.

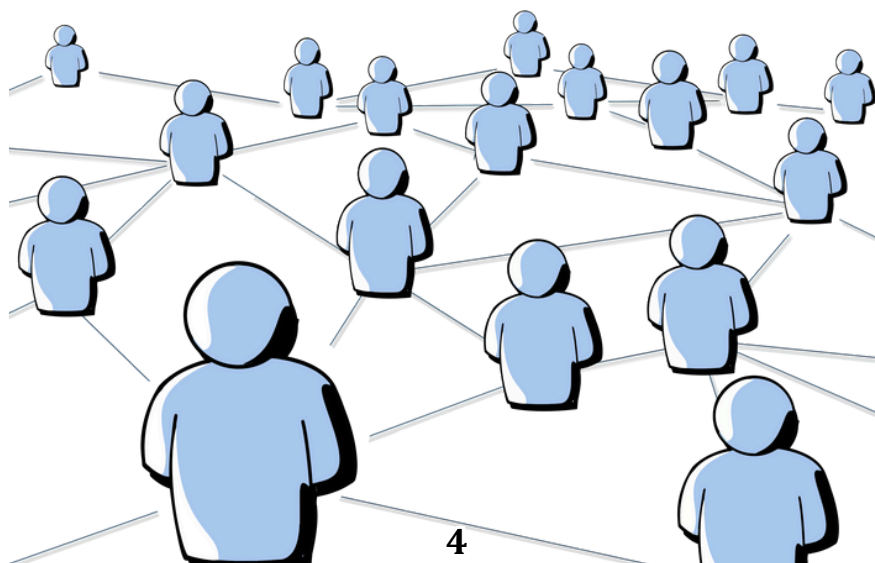
A 2020 article by Sara Heath notes that fewer patients report financial responsibility difficulties, but high medical costs remain a challenge. 14.7% of women, 16.2% of children, and 20.6% of non-Hispanic black people faced payment issues regarding medical bills. These populations were more likely to face financial responsibility issues than adult white male peers, showing a correlation between minority groups and cost-related healthcare issues (Heath, 2020, para. 4). Uninsured individuals were more likely than insured individuals to face patient financial responsibility challenges (Heath, 2020, para. 5). Statistics show that many underserved groups, including uninsured households, face devastating consequences even if a single family member falls ill because of the buildup of overwhelming amounts of medical bills. Families who have a hard time paying medical bills are more susceptible to serious financial consequences, including problems with paying for housing, clothing, or food and filing for bankruptcy (Heath, 2020, para. 13). This, in turn, leads to increased health and social disparities (Heath, 2020, para. 13). A quarter



of Americans delay their healthcare access because they worry about out-of-pocket expenses(Heath, 2020, para. 15). If healthcare costs and payer coverage continue to rise, patients will become increasingly wary of their capability to achieve proper wellness.

Warth conducted a cross-sectional study among over-indebted individuals to analyze patient-physician communication regarding financial problems. The study found that only 22.6% of patients discussed financial problems with their general practitioners. Cultural and social norms also affect when and how patients communicate their financial difficulties to their physicians. Individuals would rather leave without treatment before admitting to these difficulties. Furthermore, people with higher education levels were less likely to discuss this topic than those with medium and low education levels. Individuals who are chronically ill, are in high financial distress, do not have migrant backgrounds, and cut down on necessary items to pay for medications are more likely to discuss this topic (Warth, et. al., 2020, para. 3). These people groups do so in hopes that their opinions will bring about change and equality in healthcare. Further, the researchers concluded that bettering communication and screening through periodic evaluations of financial issues in clinical practice can help identify vulnerable populations and promote healthcare access, to social services, and well-being for all patients(Warth, et. al., 2020, para. 4). Less than one in three patients who reported high financial distress or medication non-adherence due to cost discussed their financial issues with their general practitioner (Warth, et. al., 2020, para. 20).

In addition to patients, there are many unique financial challenges that doctors and other medical professionals face that most others will never encounter. Doctors face high student loan debts, more than other professions. Students not in the medical field have an average of \$32,731 of student loan debt, whereas doctors have an average of \$30,000, plus \$215,900 of medical school debt (Wolstenholm, 2021, para. 4). “Physicians and other medical professionals usually don’t start making any ‘real’ money until they’re in their mid-thirties” (Wolstenholm, 2021, para. 5). Moreover, this can prolong their retirement planning and leave them with less savings than others. To compensate for these disadvantages, doctors often must work past the normal retirement age (Wolstenholm, 2021, para. 16-17). This leads to burnout and an increase in health issues among physicians. They also generally do not qualify for traditional mortgages since they usually have such little savings, immense debt, and barely any income or credit history. Physician mortgage loans are built for this situation. This loan is a great option for young doctors for multiple reasons, including that they have few down payment requirements (Wolstenholm, 2021, para. 6-7). Because they have more to lose, doctors need to obtain various types of insurance including medical malpractice, physician disability, and term life (Wolstenholm, 2021, para. 8-10). As his third point, Wolstenholm discusses how doctors struggle with lifestyle inflation. When doctors finally start making money, generally in their late twenties or early thirties, they often splurge on expensive items that are not sustainable but bring them short-term satisfaction (Wolstenholm, 2021, para. 12-13). This sources from inexperience with large amounts of money earlier in their life and can quickly lead to serious financial difficulty in the future.

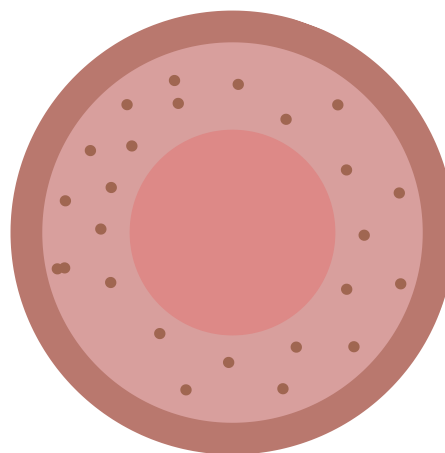
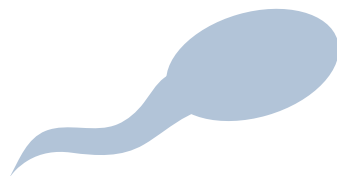


Hospitals must create innovative ways to financially maintain their employment numbers. An analysis by Reuter found that hospitals pay billions to recruit and retain nurses in order to address the nationwide nurse shortage in various ways, such as salary raises, signing bonuses, and even repaying student loans (MacDonald, 2017, para. 1). Despite these efforts, this problem is only going to worsen. By 2024, the Bureau of Labor Statistics projects more than one million nurse job openings (MacDonald, 2017, para. 2). To help recruit and retain nurses, some hospitals are helping with student debt if they agree to work at the hospital for two years. Some hospitals are also employing foreign nurses, but there has been much delay in issuing visas due to the current political climate. Other hospitals have hired travel nurses to fill the gaps, which makes it harder for rural hospitals because they do not have the money to hire them (MacDonald, 2017, para. 5-6). Healthcare experts suggest developing “a succession plan now and see if experienced nurses will consider delaying retirement if they can take on new roles in patient navigation or education or decrease their hours” (MacDonald, 2017, para. 9). More efforts need to be made to encourage workers in healthcare to continue working, which primarily ties into their financial concerns and stability.

The financial impact of COVID-19 affected rural areas drastically. The pandemic led to much lower patient volumes which cut down revenue and also led to many clinics closing down. Rural medical practices were already geographically spread out. The pandemic reduced their numbers even more (Miller, 2020, para. 10). This led to many medical professionals moving to urban areas. Additionally, Telemedicine became popular during the pandemic and is continuing to stay. This makes it difficult for rural individuals who do not have the proper resources to receive medical care since rural clinics are shutting down. Therefore, they may have to travel further to go to a clinic but may not have the means of transportation. Moreover, they may not have the technology to be able to use Telemedicine. The Paycheck Protection Program is a federal relief program that allows small businesses to be able to pay their employees during the pandemic via a

forgivable loan (Miller, 2020, para. 28). As of April 2020, 20 counties have no pediatricians. Dr. Terri McFadden, a pediatrician, is concerned that this problem will only exacerbate (Miller, 2020, para. 30). Furthermore, the Association of American Medical Colleges (AAMC) published an article by Michael Dill. He expressed, “We already needed more doctors. Then COVID-19 hit.” An AAMC report estimates that the country would need around 180k more physicians for all insurance-, place-, and race-based inequities regarding healthcare access to be eliminated (Dill, 2021, para. 2). The pandemic also increased burnout in medical professionals; a consequence from this is physicians retiring earlier (Dill, 2021, para. 6).

I was an IVF baby and only one of the triplets that survived. As an infant, I was diagnosed with intrauterine growth retardation and failure to thrive. For most of my childhood, I had to be fed through a G-tube due to acid reflux and an inability to maintain adequate nutrition. As a result of my diagnosis, my family and I have been surrounded by numerous specialists, physicians, and nurses and directly affected by the United States healthcare system. Because I spent my entire life around the medical field, I felt I was pulled into it. My illness placed intense stress on my family, which resulted in a plethora of unanswered questions: “How will we ever pay for this? What if the treatment does not even work?” These unsettling questions fused together, and they currently feed my resolve to provide my future patients with quality care. The culmination of my earliest memories has fueled my interest in medicine and business. It is critical for medical professionals and society as a whole to obtain resources to best address the complexities affecting our healthcare system today. As a result, we must focus on the relationship between business and medicine in order to improve our healthcare system.



Once it was discovered that I was below the third percentile of the growth chart, doctors decided that it was imperative for me to receive nutrition through a gastrostomy tube. However, because this required extensive treatment, my parents struggled with what most families inexorably struggled with affordable care. In accordance with our insurance, my parents drafted a detailed explanation for why my treatment was necessary and, more importantly, why the insurance company should help cover costs. I believe, from personal experience, that the more costly treatment is, the more families struggle to get the quality of care everyone deserves. Going forward, I want to learn how I can use my experience to contribute to improving the quality of care for others. Because of this, I am part of the Baylor BusinessFellows Program, learning about the relationship between business and healthcare. I wonder what would have happened to me if my family and I did not have insurance. A choice would have had to be made between getting much-needed medical care and being in a devastating financial state versus not getting any medical care due to financial issues and suffering the consequences.

Uninsured individuals have to face decisions like this every day. Financial difficulties, health and social disparities, and medical care interconnect and create a continuous cycle that increasingly gets more severe. We must stop this cycle. Innovative ways to reduce costs for those who need high-quality care but face crippling financial burdens need to be more accessible. Lastly, expanding coverage would help people of lower incomes, who make up most of the population that is uninsured.

To address issues regarding patient financial responsibility and the healthcare revenue cycle, healthcare organizations should offer a cost estimate before an appointment. Patients often encounter unclear billing processes. This estimate will allow patients to anticipate any large medical bills they may have and adjust their personal finances accordingly.

Additionally, asking for a small initial deposit will allow organizations to receive more patient payments. To aid this problem, healthcare organizations should change to less complicated billing processes and put more resources towards helping patients navigate them in order to make the correct payments in a timely manner. For example, healthcare administrators should walk patients through the payment process. To create a more streamlined and efficient billing system, the government should create benefits for healthcare organizations to automate their billing systems to meet patient needs. To meet patient needs, healthcare organizations should offer payment plans and recognize the financial demand medical care has on individuals.

"Failure to ensure access to healthcare for all lies at the heart of the US failure to achieve value for money," says Karen Davis (Davis, 2007, para. 1). I believe we think too unjustly about healthcare. Most people and groups creating policies and changes regarding the healthcare system are privileged individuals with the financial means to afford proper care. These people may even have the resources to partake in elective medical procedures. There are millions of uninsured people in the United States who do not have the opportunity to speak up about the struggles and inequality they face regarding healthcare. Privileged individuals of society, despite not experiencing these troubles firsthand, must advocate for them to implement reforms that help society altogether.

There are many different exposures that affect one's physical and mental well-being. More research must be done to show that financial health is a social determinant of health that can be defined, analyzed, and shaped to better not only one's health but also well-being. The study above regarding financial health as a social determinant of health is the first to associate domains of financial health with conspicuous public health outcomes. This study must create a chain reaction to allow for more research to be done regarding financial health in the public health sector.



Regarding employee recruiting, retainment, and burnout, we must prepare in advance for possible medical professional shortages. I have seen firsthand how a physician's duties lie largely beyond patient care and often include a myriad of administrative tasks that may hinder their ability to provide quality service. With only a limited amount of time for each patient, doctors are frequently criticized for a lack of communication and empathy. This could also lead to burnout in the medical community, which can lead to a shortage of medical professionals. If these tasks are simplified using business tools, medical professionals will not only have exemplary medical knowledge but also will be able to have more time to understand their patients psychologically and emotionally. Furthermore, they will be capable of effectively communicating with their patients. Helping medical professionals financially will create a more positive environment between employers and employees in the healthcare domain. This would also show that the employer genuinely cares about their employees and would help with retaining employees.

Honestly, I never really thought about the financial struggles doctors constantly go through.

Since it takes doctors longer to see financial gain, it makes sense that it would take them longer to begin planning and saving for retirement and other expenses than others. As a future medical professional, I find this as one of the biggest drawbacks to becoming a doctor. Personally, I am grateful for my parents as they have provided me with the means to live a comfortable lifestyle, in addition to financially supporting my education. This financial stress can affect their mental health and consequently their work.

When researching, I was surprised to find out information about physician mortgage loans. I believe that more programs like this should be created to financially assist medical professionals. There should also be assistance regarding housing, as residency and fellowship programs have varying housing costs due to their location. Some locations may be more expensive than others. Doctors also often feel discouraged after seeing the people they went to college with go on with their lives

while they are still in school or residency. I never thought of lifestyle inflation to be something that is a financial issue for doctors. My research has proven me wrong. Even though I have delved deeper into the struggles doctors go through, I believe the benefits far outweigh the challenges, specifically financially. Going forward, I will be more careful with my money by saving and investing. At the end of the day, I know my career choice will be rewarding to both my future self and my patients.

The healthcare system has been largely reshaped due to various business sectors and policies.

Not only has business enhanced experiences for patients, but it also has revolutionized medical practices. I believe that innovative business tools and policies will help ease the burden of administrative tasks. Therefore, we must work towards bettering the relationship between medical professionals and patients, and the healthcare system as a whole.

Physician and nurse shortages are exponentially growing. The COVID-19 pandemic has only worsened these shortages. The issue of burnout is also associated with resignation rates and can be mended by retaining medical professionals. We are in a nursing shortage, which is only going to worsen. In order to help this problem, we must allocate a certain amount of money for signing bonuses, free housing, helping with student debts, and more. There should be new policies surrounding nurse and physician shortages to help recruit and retain them. For example, the government should give a specific amount of money to each hospital to allow for nurse and physician bonuses. This money could also be used to help with housing and student debt costs. Additionally, Congress should pass legislation that allows for more international medical professionals to be hired by making obtaining a visa easier. This will help reduce the nursing shortage, and more patients will be able to get proper medical care.



Research has concluded that financial impact has a large effect on healthcare in many groups, from patients to medical professionals to hospital networks. This leads to a variety of issues at hand. There must be many social policy changes in order to address the root causes of these issues. Physician mortgage loans are just one way to financially help doctors. More programs like this should be created to financially assist medical professionals in various ways. One should focus on housing, as residency and fellowship programs have varying housing costs due to their location. Because of this, some locations may be more expensive than others. Burnout can lead to a myriad of health issues including anxiety, depression, insomnia, fatigue, and disruptive performance-related problems at work. More policies in addition to physician disability should be implemented to allow physicians to put their mental and physical health first. If this does not happen, it could affect their duties at their job, relationships with co-workers, and even their communication with patients. One policy could include more paid time off or leave of absence with partial benefits, so medical professionals do not have to financially worry as well.

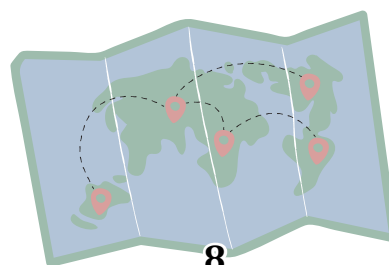
There are many differing opinions about healthcare coverage and insurance. Since uninsured individuals are less likely to vote, it is hard for them to gain advocacy for policies that will benefit them. Policies should be implemented that can be agreed upon by both U.S. political parties. One solution would be making healthcare a higher priority rather than tax cuts or other expenses regarding the federal budget and spending. Another solution could be to change the way medical providers are paid so that it rewards quality and patient-centered care, in addition to efficiency.

Healthcare policymakers must be cautious of the financial responsibility difficulties patients often face. Regarding patient financial problems, when they remain unvoiced, patients may not follow medication usage and suffer from preventable adverse health effects due to financial strain. Few studies have assessed the relationship between social determinants and patient-physician communication about financial issues. More research, specifically qualitative,

must be done to make accurate conclusions on the underlying reasons for the differences in communication among over-indebted patients and families. We must increase awareness about various ways that patients can communicate financial problems. General practitioners need further training to identify and communicate their patients' financial issues and relay available resources to them. Routinely analyzing patient financial problems can also help identify at-risk patients. By recognizing non-medical problems that also affect one's well-being, practitioners can provide patients with more affordable and effective care based on their needs. Lastly, the U.S. should adopt Germany's procedures: individuals have the option to enroll in statutory health insurance which allows them to apply for waiver or reimbursement of co-payments that exceed 2% of their annual household income.

If the number of rural medical practices increases, and physicians move to urban areas to make a higher salary, there could be many devastating consequences to rural communities. We must create incentives for medical professionals and practices in rural areas to help those communities. Some may include stipends for medical students and residents to work in underserved areas, and bonuses for physicians who choose to work in these areas for more than two years. Other incentives could include loan forgiveness and helping with student debt. For individuals who do not have the proper resources, such as technology and connection for Telehealth, places can be established in underserved locations where individuals can come and speak with a doctor using Telehealth. Lastly, a certain amount of funding must be allocated for rural residency programs, so medical students and professionals have the opportunity to train in rural areas if they want to.

We must invest in business leaders for the healthcare field. These individuals will be able to use various business tools to guide the field amid any kind of disruption, including changes in government regulations, competition, and advocacy for various groups in the medical field. They will be able to bring a unique perspective regarding healthcare and bring new ideas to the table. The leaders should be from different areas of business including, finance, marketing, economics, accounting, and management, ultimately bettering the U.S. healthcare system.



Many people may not realize the importance of analyzing the business, specifically the financial, aspect of healthcare. Public health, business, and healthcare are interrelated and should not be treated as separate entities. As we move towards the future, we must continue researching and implementing new policies and guidelines. There could be many benefits to this, including reducing healthcare costs, improving employee well-being and productivity, and giving more people accessible medical care. We must look into the business aspects of healthcare, not solely in an administrative or monetary sense, but in regard to public health as well. This allows for health and social disparities to be analyzed in relation to business.



Being able to connect my personal experiences to the articles we have discussed in class was a very valuable experience. Already going through medical issues is stressful, emotional, uncertain, and has a huge financial burden. There should be a greater focus on the relationship between business and healthcare. I look forward to my journey in medicine where one day, I can use my skills to improve the lives of those who just need a little bit of hope. My life was saved by the doctors who used advancements in medicine to keep a premature baby alive, and one day, I hope to be able to do the same.

Ritz Battula recently completed her undergraduate studies at Baylor University, majoring in Baylor Business Fellows and Human Resource Management, accompanied by a Leadership in Medicine Minor on the Pre-Medical Track. Throughout her academic journey, she demonstrated exceptional leadership skills by holding seven officer roles in four different student organizations, earning her the distinguished Excellence in Student Involvement Award from Baylor University. Ritz's engagement extended beyond the classroom, encompassing clinical experience, community service, and research, fostering a well-rounded understanding of the intricacies within the realm of healthcare. Her early exposure to healthcare barriers prompted her desire to be a conscientious and effective agent of beneficial change in the healthcare industry and be a leader within the medical profession. Ritz's goal is to use her skills and values to ameliorate the lives of those who just need a little bit more hope and care as a compassionate physician.

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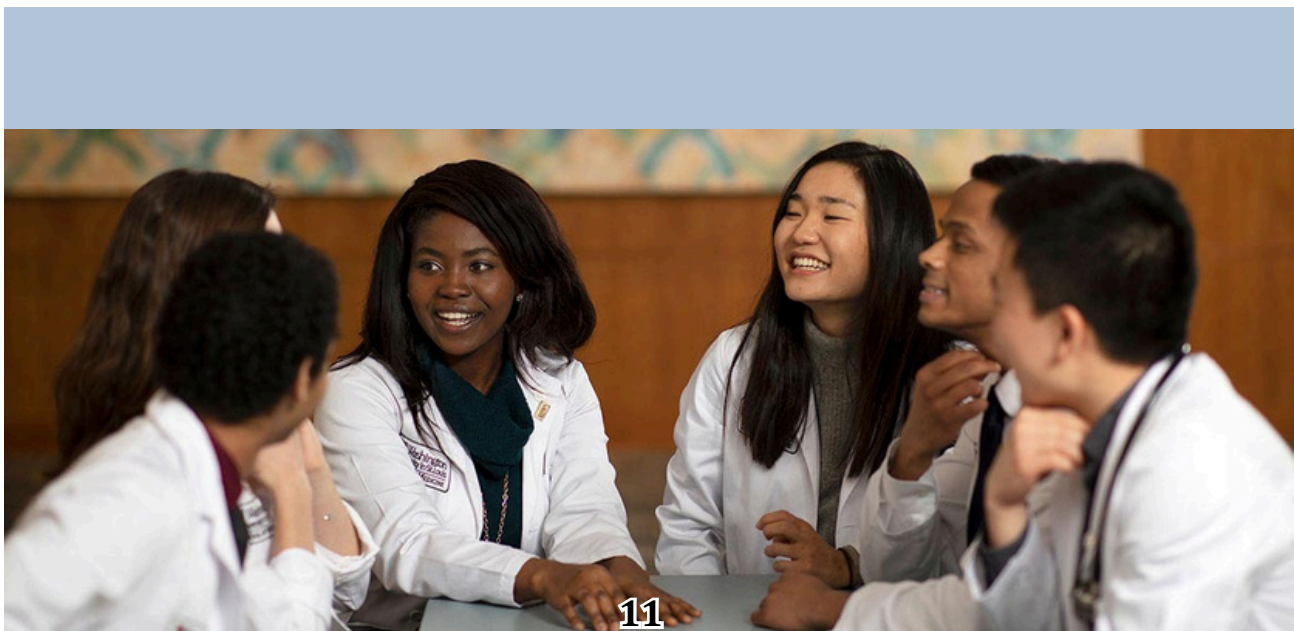
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THE IMPACT OF ETHNICITY & CULTURAL BACKGROUND ON MEDICAL STUDENTS

ALEXANDRA COLLINS & FAITH WIDEN

Abstract: Medical education today spans undergraduate, postgraduate, and continuing professional development sectors, aiming to produce knowledgeable, skilled healthcare professionals dedicated to patient care and lifelong learning. This complex field integrates diverse pedagogical practices and philosophies, focusing on patient safety and the challenge of developing curricula that ensure competent future doctors.

This article explores the impact of ethnic and cultural backgrounds on medical students in the United States, with a particular focus on support programs and resources for racial/ethnic minorities and DACA recipients. It delves into the unique barriers faced by DACA students during the application process, highlighting significant differences in experiences between racial/ethnic minority and White students. Disparities in medical specialty program applications, the language used in Medical Student Performance Evaluations (MSPEs), and the recruitment of minority students for surgical residencies are examined.



Current Demographics

Analyzing the current ethnic and cultural background of medical students can provide insight into disparities between racial/ethnic minorities and White students. As well as disparities between DACA recipients and permanent U.S. citizens. Between 2018 and 2019, most medical student school graduates were primarily White. According to the AAMC (n.d), White students accounted for 10,879 (54.6%) of students, Asian students made up 4,299 (21.6%), multiple race/ethnicity students made up 1,598 (8.0%) students and Black or African American students made up 1,238 (6.2%) of students. Additionally, Hispanic, Latino, or of Spanish origin students made up 1,063 (5.3%) students, American Indian or Alaska Native students made up 38 (0.2%) of students and students who have identified as other compromised 380 (1.9%) students (AAMC, n.d). Lastly, students of unknown race/ethnicity made up 124 (0.6%) of students, and Native Hawaiian or other Pacific Islanders made up 9 (0.1%) of students graduating.

A less studied part of students in medical school, yet very important, is the demographic of DACA recipients. Unfortunately, there is no information available at the moment on how many medical school students are DACA recipients (Cazares, 2022). However, in March 2018, there was an estimate that nearly 100 medical students were DACA recipients. According to Cazares (2022) “many estimate that DACA medical students will become 5,400 to 31,860 new physicians in the approaching decades.” Between 2018 and 2019, the AAMC (n.d) found that non-U.S citizens or nonpermanent U.S. residents made up 309 (1.6%) of medical school student graduates. It is important to look into the ethnic and cultural background of medical students because it allows us to identify disparities. Once we identify these disparities we can work to discover factors that contribute and create solutions to close existing gaps.

Barriers Faced by DACA Students

DACA medical students face several barriers during the application process and throughout medical school in the United States. Finances are a major stressor, as DACA students are categorized as international students, making them ineligible for student loans and other forms of financial aid (Gillezeau et al., 2021). Many state residency rules further impact access to financial aid, as DACA recipients are not always considered eligible for in-state status (Gillezeau, 2021; Getrich et al., 2023). This limits the schools to which they can apply, as some medical schools only accept in-state students or prioritize them for financial aid (Getrich et al., 2023).

Filling out medical school applications also presents difficulties for DACA applicants due to varying policies on DACA student admissions (Gillezeau, 2021). Even when reaching out to schools directly, students often do not receive clear answers. Despite the DACA program being established in 2012, DACA applicants are stigmatized, and medical schools may be uncertain about their eligibility for admission or their qualifications (Garcia et al., 2022). There is a need for the implementation of DACA-friendly admission policies and education of medical school staff on these policies (Garcia et al., 2022).

The uncertainty surrounding DACA's future is another significant barrier. In 2017, former President Trump announced an end to DACA, which affected many medical students relying on the program (Gillezeau, 2021). This uncertainty impacted students' grades and led them to question whether they would be able to complete their medical education and secure residency placements in the U.S. (Gillezeau, 2021). Additionally, DACA students reported feeling unsure about disclosing their immigration status.



Differing Medical School Experiences for White and Minority Students in the U.S.

Ethnic/racial minority medical students face more challenges than their White counterparts. Bright et al. (1998) found that 76% of underrepresented minority (URM) students reported their educational experiences were affected by race, compared to 30% of White students. Additionally, 52% of URM fourth-year students felt they had to work twice as hard to be seen as equal to other students, compared to only 6% of White students (Bright et al., 1998). Ethnic/racial minority students face daily racism and are often assigned menial tasks that undermine their education (Beagan, 2003).

Chisholm et al. (2021) studied racial microaggressions experienced by URM medical students in the U.S., finding that 55% of URM students reported race-related microaggressions compared to 31% of non-URM students. Additionally, 62% of URM students felt these microaggressions contributed to burnout, versus 29% of non-URM students (Chisholm et al., 2021). 64% of URM students reported that microaggressions significantly compromised their learning, compared to 49% of non-URM students.

URM students frequently reported being mistaken for service workers (55% vs. 31% of non-URM students) and hearing racially offensive comments (89% vs. 67%) (Chisholm et al., 2021). Beagan (2003) reported 185 offensive jokes, 36 of which were racist. Additionally, 89% of URM students were mistaken for being the same race as other students, and 80% were asked to be a spokesperson for their race, compared to 67% and 52% of non-URM students, respectively (Chisholm et al., 2021).

Racial and ethnic minority students often did not relate to the advantages identified by White students and were marginalized through segregation, facing difficulties responding to racist jokes and comments (Beagan, 2003). 29% of minority students felt they did not fit in at medical school, compared to 7% of nonminority students (Beagan, 2003). Assumptions about intelligence based on race were reported by 61% of URM students, compared to 41% of non-URM students. Additionally, 25% of URM students reported being ignored, compared to 13% of non-URM students, and 35% felt their contributions were devalued because of their race, compared to 16% of non-URM students (Chisholm et al., 2021).

Bright et al. (1998) found that 25.4% of URM students had trouble creating support networks with peers, compared to 14.5% of White students, and 12.9% of URM students struggled with forming working relationships with peers, compared to 6% of White students. Finding role models and mentors of the same race was a challenge for 31% and 22.5% of URM students, respectively, compared to 1.4% and 3.9% of White students. Among Asian students, 27.4% faced challenges finding mentors of the same race, and 30.1% had difficulties finding role models, compared to 1.4% and 3.9% of White students, respectively.

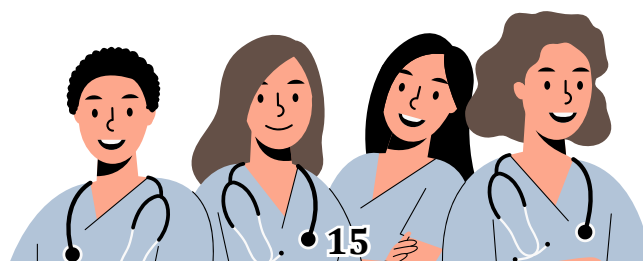
Chisholm et al. (2021) concluded that URM students need more support to cope with microaggressions, including new support programs and faculty training to prevent these issues. Additionally, efforts should be made to find mentors of the same race/ethnicity for URM students.

Support Available to Minority/DACA Students

There are support programs and resources available to racial and ethnic minority students, and immigrant students in the United States. However, given the large ethnic and racial gap among medical students. And the gap between DACA recipients and permanent U.S. citizens among medical students. We infer that although there appear to be many programs designed to support students from disadvantaged backgrounds and to promote diversity, these programs are not accessible. Support programs and resources include but are not limited to (the University of Houston, n.d):

Program	Overview
The Student National Medical Association (SNMA)	The purpose of this organization is to support current and future minority students underrepresented in medicine (SNMA, n.d). As well as supporting disadvantaged communities and expanding the number of physicians who are “culturally competent and socially conscious physicians” (SNMA, n.d).
National Medical Fellowships (NMF)	The NMF works towards getting rid of systemic and structural racism that is responsible for health disparities. They do so by providing opportunities for racial and ethnic minority students who are interested in medicine and behavioral health professions. Additionally, this organization is working towards increasing the number of racial and ethnic minorities involved in clinical research (NMF, n.d).
Baylor College of Medicine - Transformed Post-Baccalaureate Premedical Scholars Program	The goal of this rigorous program is to support and prepare underrepresented science and medical college graduates to enroll and do well in biomedical Ph.D. programs. Scholars attending this program are paid to do biomedical research with a mentor. They are provided with resources such as graduate school application support and workshops (Baylor College of Medicine, n.d).
AMSA’s Enriching Medicine Through Diversity	The goal is to promote URM students to follow a career in medicine through education and advocacy (ASMA, n.d).
Houston LSAMP	Essentially, the Houston LSAMP is to make STEM disciplines available to more ethnic and racial minority students (University of Houston, n.d) many universities are partnered with this program
AAMC’s Medical Minority Applicant Registry (MED-MAR)	MED-MAR supports students who identify as part of an underrepresented group in medicine (AAMC, n.d). MED-MAR is contacted by medical schools wishing to diversify their applicant pool and they provide a registry of emails of students involved in this program
Latino Medical Student Association	The Latino Medical Student Association works towards unifying and uplifting “current and future physicians through service, mentorship, and education to advocate for the improved health of the Hispanic & Latina/o/x community in the United States” (Latino Medical Student Association, n.d). While improving patients health outcomes

Program	Overview
Summer Health Professions Education Program (SHPEP)	SHPEP is not necessarily geared towards ethnic and racial minorities (SHPEP, n.d). They do highly encourage these minorities to apply to this free summer program that is beneficial towards pre-med experiences but also teaches financial literacy (SHPEP, n.d).
AAMC's Diversity and Inclusion	AAMC's Diversity and Inclusion provides resources to medicine and articles promoting diversity in medicine (AAMC, n.d).
Vietnamese American Medical Association (VAMA)	The Vietnamese American Medical Association promotes Vietnamese individuals to enter the medical field through many academic scholarships targeting interest in entering medicine (VAMA, n.d).
UCLA MEDPEP	MEDPEP Program purpose is to provide for through a one year long program where underrepresented and disadvantaged students (UCLA Health, n.d). In this program at UCLA students learn leadership, study skills and confidence in oneself success. It encourages students to go into medical professions and specifically where there are shortages (UCLA Health, n.d).
AAMC	This program emphasizes the importance of diversity in health care and medicine (AAMC, n.d). It enhances the quality of care for patients. The AAMC argues that working to expand diversity in medical schools is a priority because without medical professionals from different backgrounds then there would be repercussions on health in the United States (AAMC, n.d).
Mayo Clinic's Undergraduate Plummer Scholars Program	The program is focused on closing racial/ethnic gaps in medicine (Mayo Clinic College of Medicine and Science, n.d). URM in medicine undergraduate students are able to partake in this program. There are opportunities to explore different careers in medicine, and prepare and receive support for the MCAT (Mayo Clinic College of Medicine and Science, n.d). Also, support for medical school applications and interviews is provided.



DACA recipients reported getting support from school counselors and organizations aimed to help DACA recipients interested in going into medical professions (Gillezeau, 2021). In the Gillezeau (2021) study, four out of five of the interviewees had reported using an organization that offered resources and even had a list with information on medical schools that were DACA-friendly. Another interviewee reported finding a group on Facebook that provided beneficial information on DACA-friendly medical schools.

The Mayo Clinic College of Medicine and Science (n.d) argues that URM has historically not had adequate support or help in completing medical school applications. As well as not having access to resources and prep programs for the MCAT. Not having access to these resources, has resulted in URM students facing obstacles interfering in their success at medical school (Mayo Clinic College of Medicine and Science, n.d). Therefore, there needs to be action taken to support and help more URM applicants to help bridge the gap.

Diversity Trends in Medical Specialty Applications

Tiako et al. (2022) were interested in the differences in specialty-specific applications to medical residency programs. In their study, they looked at 26,320 of these applications in 18 specialties. Tiako et al. (2022) found that unsurprisingly, a majority of the applicants were White students, they made up 15,041 (57.1%) of applicants. Asian students made up 6,718 (25.5%) of applicants and Black students composed 2,575 (9.8%) of applicants (Tiako et al., 2022). Lastly, they found Hispanic students made up 1,896 (7.2%) of applicants, and American Indian or Alaska Native students comprised 90 (0.3%) of applicants.

Importantly, Tiako et al. (2022) looked into the demographics of practicing physicians.

Amongst the 592,296 practicing physicians they found that they were primarily White physicians, they made up 394,451 (66.6%) of physicians. Asian physicians accounted for 117,358 (19.8%) of physicians and 41,071 (6.9%) of physicians were Hispanic. Black physicians make up 36,639 (6.2%) of physicians and American Indians or Alaska Natives constitute 2,777 (0.5%) of physicians (Tiako et al., 2022). When looking at 2,121

department chairs, 1,730 (81.6%) were White, 212 (10.0%) were Asian, 86 (4.1%) were Black, 88 (4.1%) were Hispanic, and 5 (0.2%) were American Indian or Alaska Native (Tiako et al., 2022).

URM applicants in the 18 specialties looked at by Tiako et al. (2022) were primarily represented in family medicine, physical medicine and rehabilitation, and obstetrics and gynecology. While they were significantly underrepresented in plastic surgery, otolaryngology, and orthopedic surgery. Robertson et al. (2020) studied the lack of African American medical school students and the low numbers of African American people choosing to go into academic surgical careers. In this study, Robertson et al. (2020) spoke to sixteen African American students at the University of Pennsylvania who said they were interested in surgery. They found that there were common barriers African Americans faced going into academic surgery careers.

According to Robertson et al. (2020), these factors were not independent from one another and were: lifestyle concerns, financial pressures, having to work in a predominantly white environment, lack of mentorship, feelings of having to prove oneself, stressful environments, and concerns of being a minority female in surgery (p. 598). There needs to be immediate action taken to close the ethnic/racial gaps in applications to surgical residency programs. Robertson et al. (2020) encourage creating official mentorship programs and guaranteeing no discrimination during recruitment. Having clear, non-negotiable goals for bettering diversity and promoting, and sustaining pipeline programs (Robertson et al., 2020). Taiko et al. (2022) suggest that there needs to be further action taken to improve diversity and make it fair to all applicants regardless of race or ethnicity.



Disparities in Language Used in MSPEs for White vs. Minority Medical Students

Medical Student Performance Evaluations (MSPEs) are assessments meant to be an objective reflection of a medical student's ability and qualifications; however, the students' racial and ethnic identity impacts the students' assessment due to unconscious bias.

In 2017, a study examined the words used to describe students' performances and the frequency of certain words used for students apart from different racial, ethnic, and gender groups. Ross et al. (2017) found that White students were more likely to be called words conveying their ability to be "exceptional," "best," and "outstanding" as well as "bright" than their ethnic and racial minority counterparts (Ross et al, 2017). It is important to note the frequency of racial and ethnic minority groups called "competent." 40% of Black students were described as "competent" versus 20% of Hispanic students, 29% of White students, 27% of Asian students, 32% of Multi-racial students, and 34% of students identifying as Other (Ross et al, 2017). The connotation of descriptive is very important in this study. "Competent" was used in a positive connotation 37% of the time when describing Black students, significantly lower than for White students (57%) and Asian students (60%) (Ross et al, 2017). Hispanic students had a similar percentage of 33% (Ross et al, 2017).

The chart below includes the words that had a significant difference in the words used between the different racial groups:

Word Categories	Black	White	Hispanic	Asian	Multi	Other
Standout Words						
Exceptional	50%	52%	64%	54%	64%	58%
Best	41%	44%	54%	49%	50%	58%
Outstanding	77%	84%	86%	79%	82%	88%
Ability						
Bright	43%	44%	57%	54%	54%	52%
Competent	40%	20%	29%	27%	32%	34%
Grindstone						
Organized	71%	74%	80%	77%	82%	79%

The racial and ethnic disparities in students recruited for surgical residency in the United States
 The following data and tables were retrieved from The American Journal of Surgery by Kim et al.
 “Racial/ethnic background of US medical school graduates from 2011 to 2020” (“Abbreviations used:
 IQR, Interquartile ration”)

Academic Year	Total Grads	White %	Black %	Asian %	Hispanic %
2011 - 2012	17363	62.1	6.5	21.7	5.3
2012 - 2013	17341	61.4	6.7	21.5	5.0
2013 - 2014	18155	59.5	5.4	20.0	4.8
2014 - 2015	18072	58.0	5.8	20.5	5.2
2015 - 2016	18704	58.9	5.7	19.8	4.6
2016 - 2017	18938	57.1	5.5	21.1	5.0
2017 - 2018	19260	56.9	5.6	21.1	5.0
2018 - 2019	19562	56.31	5.7	21.1	5.4
2019 - 2020	19936	54.6	6.1	32.7	5.4
2020 - 2021	20387	54.6	6.6	22.2	5.9
Median % (IQR)		57.6	5.6	21.1	5.1
P-Value		<0.01	0.31	0.74	0.21

school graduates from 2011 to 2021 with no significant change in Black, Asian, and Hispanic graduates. Kim et al. (2022) mention that the values do not add up to 100% due to other racial backgrounds not being present in the table. Interestingly, Asian graduates “remained the most prevalent minority group at 21/1%:” (Kim et al, 2022).

There are lots of obstacles people of color face when entering a field dominated by white people. Roberts et al. (2019) study at the University of Pennsylvania interviewed black prospective surgery students about the challenges they faced pursuing a surgical career. There were common themes found throughout the interviews that shed light on the pressure black students face by being one of an underrepresented group (Roberts et al, 2019). Students explained how they felt a “spotlight” on them, and that they were in charge of representing their demographic (Roberts et al, 2019). This made Black students feel the need to prove themselves as “competent professionals” (Roberts et al, 2019). Students spoke of their concerns of being viewed as unqualified by patients and superiors, and students

explained how they were afraid that patients and superiors thought they were only doctors because of affirmative action, not because of their qualifications (Roberts et al, 2019). These students also struggle with not fitting in with their colleagues due to having different backgrounds. Black students spoke of how they had a hard time thriving because they didn't have the same academic and social advantages as their colleagues who came from prestigious universities (Roberts et al, 2019). This contributes significantly to a lack of mentorship due to coming from less-represented backgrounds in medicine and making it harder to create connections (Roberts et al, 2019).

MCAT Scores Lower for Black and Latino Examinees in the U.S.

Woolf et al. performed a study in the United Kingdom (UK) in 2013 attempting to find explanations behind ethnic minority students performing "more poorly" than their white peers in the final year practical (OSCE) and written exams. They did not find a direct cause of the phenomenon, but they discovered factors that did not play a role in the ethnic gap in attainment in medicine. The factors that did not explain the gap are self-reported motivation, completion of secondary education in the UK, exam scores before medical school, how conscientious the students are, age, students' father's socio-economic status, and whether or not they transferred to UCL from Oxbridge.

During regression analyses, the sample size was not large enough to distinguish the performance of students from different minority groups; however, they did make a few important discoveries. At GCSE, Indian students had higher grades than other ethnic groups, including white students. They found that minority student groups have lower attainment than the white British group once they reach higher education "despite minority ethnic groups varying in the proportions attending higher education (HE), in the types of university they attend, and in the courses they study" (Davis et al., 2013). White British students scored higher on the practical OSCE exam than Indian, 'white-other', and 'all other minority ethnic' groups.

Questionnaires that were handed out to participants would ask about general health, the student's study process, and their socio-demographics, and it was discovered that students who did not respond to the questionnaires in their third year performed worse on their final year examinations and were more likely to be a part of a racial/ethnic minority group. Other reasons could explain why non-respondents performed worse, such as

how the questionnaires were administered during lectures, so students who did not attend the lectures did not fill out the questionnaires; they were "likely to have been disorganized and/or lower on conscientiousness, which are themselves predictors of lower examination performance" (Woolf et al., 2011, p. 25). The questionnaire failed to measure other problems that affected students' mental health, such as their experiences with stereotyping or generalization due to their racial/ethnic identity and their perception of the institutional climate (Woolf et al., 2011).

Additionally, they found that having parents who are medical doctors, speaking English as a first language, having a parent who speaks English as a first language, living at home during the term, study habits, desire to drop out or practice medicine, experiencing negative events, and stress were factors that did not explain both the ethnic attainment and final year performance gaps.

Test bias was another aspect Davis et al. studied as a possible explanation for lower MCAT scores. Test bias is when a supposed objective test has deficiencies where the scores are influenced by content and conditions unrelated to the knowledge and skills that are meant to be measured (Davis et al., 2013). This is accomplished when the test includes questions that only certain groups of people would know but are unrelated to what is being measured. Test bias is also created when there are "different meanings for scores earned by members of different identifiable subgroups (Davis et al., 2013, p. 595). However, Davis et al. found that there was "no statistically significant predictive bias against minority students (2013).

How the examinees grew up could affect MCAT scores. Environment and experiences during childhood can affect their ability to perform well on tests, like the MCAT. Economic status and location affect resources and education available can either positively or negatively affect academic achievements (Davis et al, 2013). These types of influences are mainly caused by structural racism. Overt discrimination against racial and ethnic minority groups have been outlawed since the 1960s, but centuries of legalized discrimination has put minority groups at a disadvantage, so much so that the effects are still seen today (Lucey & Saguil, 2020). Some of these effects include being more likely to experience poverty, food insecurity, receive subpar education, live in single-parent households, and have parents who do not have a full time job year-round (Lucey & Saguil, 2020). Previous programs that prevented, both implicitly and explicitly, minority groups from having access

to housing, economic opportunity, health care, quality education, etc. has continued to affect the current generations by not allowing people in the past to generate generational wealth (Lucey & Saguil, 2020). It essentially set the foundation of inequality for future generations. The effects of structural racism lead to the environment and experiences that affect people of color to not perform as well as others. While these factors alone do not solely predict a person's academic ability, they create a domino effect when other factors are involved (Davis et al, 2013).

Rise in African American and Latino Medical School Applicants Over the Last Decade?

The Association of American Medical Colleges (AAMC) found that there has been an increase in Black and Hispanic applicants and enrollees in the United States during the 2022-2023 academic year (AAMC, 2022). Black or African American students made up 9.5% of matriculants in the 2020-2021 academic year. There was an increase, though, of 9% in the 2022-2023 academic year, making up 10% of matriculants. Hispanic, Latino, or Spanish matriculants increased by 4%, making up 12% of total matriculants. Despite the increased diversity, there was a 9% decrease in American Indian or Alaska Native matriculants, causing them to make up only 1% of matriculants.

The decrease in Native American matriculants is attributed to both internal and external struggles. A study performed at the University of Utah in 2019 interviewed undergraduate students in STEM about their experiences (Jones et al, 2019). Native undergraduates spoke of their education experiences from a young age. They explained how "they were not encouraged to visualize themselves in higher education by those in positions in public schools" (Jones et al, 2019, p. 68). These students received inadequate education and they did not have a STEM curriculum in their early education (Jones et al, 2019, p. 68). Native undergrads also lacked mentorship and faced financial struggles, like other minority groups (Jones et al, 2019, p. 68 - 69). The topic of culture and science clashing was brought up as well; students explained how they had a hard time navigating medical school where the human body was used for instruction when there is a cultural significance of the body (Jones et al, 2019, p. 68). The students explained how dissecting and using human cadavers is one way their beliefs are challenged; they work through this by honoring the cadaver through instructions provided by family and elders within their community (Jones et al., 2019, p. 68). Native people's land is an important part of their identity and culture, and often native students have to move their homes, disconnecting them from their land and community (Jones et al, 2019).



Conclusion

Practicing medicine is already challenging and stressful, but to gain the ability to do so is arguably an even more difficult journey, for some more than others. People of color are under-represented in the medical field due to several barriers to preparing, applying, and getting accepted into medical school. Getting into medical school alone is hard due to structural racism – this includes not having access to quality education at a young age, living in low-income areas, etc. While in medical school, students of color have a hard time fitting into a community that is primarily made up of white students and educators. They experience higher levels of stress from experiencing racism, may that be through their professors or patients (Robertson et al., 2020). While there has been an increase in some minority groups in recent years, people of color are still disproportionately underrepresented. This not only affects future students of color but also patients.

Action needs to be taken to improve diversity and equity in medical school.

DACA-friendly admission policies need to be implemented, and medical school staff should be educated on the policies about DACA applicants (Garcie et al., 2022). The application process for residency programs needs to be addressed as well. To close the ethnic and racial gaps in application, there need to be clear goals that aim to better diversity (Robertson et al., 2020).

Microaggressions are another problem in medical school; support programs and resources are a necessity for students of color so that they have a safe space to go when they experience microaggression (Chisholm et al., 2021). Staff and faculty should also be trained to prevent them (Chisholm et al., 2021). The environment for students often leaves students of color to not partake in the community because the space is dominated by white students and teachers (from earlier sections). By making the space more diverse, students of color will have a better sense of belonging, improving their educational success. This would also allow for better mentorships the students can relate to.

The American Medical Association has provided multiple ways in which to boost diversity in medical schools. They explain how schools' policies and the administrative process needs to be enhanced to incorporate better diversity during the admission process (AMA, 2015). To provide better services for current students, physicians of color should be hired as medical school faculty and staff (AMA, 2015). By having more faculty and staff who have similar racial and ethnic backgrounds as the students, students of color will have a better support system and more likely to find better mentorships in an academic setting. AMA also touched on grading equalities in medical education, and explained how implementing equity through educating “as a community” would prevent unequal grading (Murphy, 2021). Having a pathway from community college to medical education is another way to promote better diversity. This is important because half of people of color – more specifically Black, Latinx, and Native Americans – who attend college attend community college (Murphy, 2021).



Alexandra Collins graduated from the University of California, Los Angeles (UCLA) in 2024 with a B.A in Sociology and a B.A in Anthropology. She transferred from Berkeley City College (BCC) with an A.A in Liberal Arts: Social and Behavioral Sciences, A.A-T in Sociology, and an A.A-T in Psychology. Alexandra is a Mentor for the Youth Mental Health Academy program. She plans on taking a gap year before pursuing a Ph.D. in Sociology and becoming a professor. Additionally, she recently wrapped up her role as a Research Assistant at the Heart Equity & Access Research Treatment (HEART) Lab.

Faith Widen recently graduated in December from the University of Missouri – Columbia with a bachelor’s degree in sociology. During her final semester, she completed an independent study that analyzed recent data on American citizen’s opinion of teaching sex education in public schools. She has a special interest in medical sociology, and she aspires to better her community by using research to create a better understanding of how our society operates. In addition, Faith is interested in gender studies, the sociology of food, and settler colonialism.

Figure 13. Percentage of U.S. medical school graduates by race/ethnicity (alone), academic year 2018-2019 | AAMC. (n.d.). AAMC. <https://www.aamc.org/data-reports/workforce/data/figure-13-percentage-us-medical-school-graduates-race/ethnicity-alone-academic-year-2018-2019>

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RACIAL AND ETHNIC HEALTH INEQUALITY IN THE UNITED STATES

ALEXANDRA COLLINS

Abstract: Ndugga and Artiga (2021) define health and healthcare disparities as "differences in health and health care between groups that stem from broader inequities" (para. 2). Before the COVID-19 pandemic, racial and ethnic minorities had worse health status compared to non-Hispanic White people in many health measures (Ndugga & Artiga, 2021). Including worse infant mortality, deaths related to pregnancies, and worse mental and physical health statuses (Ndugga & Artiga, 2021). Since the COVID-19 pandemic, the health disparities between racial and ethnic minorities and non-Hispanic White people in the United States are still high but have become more visible to the public. In this article, I am aiming to answer the following question: what factors are responsible for the ongoing health disparity in the United States between racial and ethnic minorities, and non-Hispanic White people?



Introduction

Throughout my research, I found that the factors resulting in the health disparity between racial and ethnic minorities and non-Hispanic White people in the United States work together. These factors are not having access to health insurance, losing health insurance, low income, unemployment, age, lower education, communication barriers, and patient-physician interactions. Additionally, residential segregation, a form of racism, is a factor. Non-Hispanic Black and Hispanic (any race) people have the highest unemployment rates and tend to work low-paying jobs. Ethnic and racial minorities working low-income jobs without health benefits will make too much to qualify for public assistance. Moreover, they live in segregated neighborhoods; individuals living in poorer neighborhoods typically have worse health statuses and less access to quality education (Lahiri & Pulungan, 2021). Furthermore, age negatively impacts racial and ethnic minority groups but impacts American Indian and Alaska Native people the most (Lahiri & Pulungan, 2021).

Income, Education, Employment and Age

The common contributing factors for health disparities between racial and ethnic minority groups and non-Hispanic White people are income, employment, education, and age. Particularly American Indian and Alaska Native (AIAN) people have the worst health (Lahiri & Pulungan, 2021). This could be attributed to Non-Hispanic White people having higher median household incomes, longer life expectancy, higher employment rates, and higher levels of education than AIAN people (Lahiri & Pulungan, 2021).

Nonetheless, age negatively impacts all racial and ethnic minority groups' disparity between them and non-Hispanic White people (Lahiri & Pulungan, 2021). Similarly, the major contributing factors to health inequality between non-Hispanic White and non-Hispanic Black people are income, education, and employment status (Lahiri & Pulungan, 2021). The most significant factors contributing to health inequality between non-Hispanic White and Hispanic (any race) people are income, county income inequality, county median household income, and education (Lahiri & Pulungan, 2021). According to Lahiri and Pulungan (2021): 72% of the health disparity between non-Hispanic Whites and Blacks is attributable to Blacks' relatively worse socio-economic and demographic characteristics, it is only 50% for Hispanics and 65% for American Indian Alaska Natives. (p. 1)

Lack of Health Insurance

It is important to understand the gap in health insurance between racial and ethnic minorities and non-Hispanic White people because the United States is experiencing an increase in ethnic and racial minority populations, and more areas are increasingly becoming urban (Sanders et al., 2020). Sohn (2017) said that individuals without insurance deal with significant challenges in accessing health services. Typically, patients are mandated to have health insurance coverage by healthcare providers or are charged a large fee.

Health insurance in the United States is inaccessible to many, especially for racial and ethnic minorities. For instance, Sanders et al. (2020) examined the Medicaid expansion amongst racial and ethnic minorities in urban and rural areas. Researchers discovered that states that adopted Medicaid expansion saw positive effects, primarily in improving the health insurance coverage for households with infants. Consequently, even with the Medicaid expansion,

Non-Hispanic White people were still more likely to be insured than non-Hispanic Black and Hispanic (any race) people (Sanders, 2020). Sanders et al. (2020) found that rural areas have higher eligible Medicaid individual populations than urban areas. Despite this, "only 38% of rural, low-income adults live in Medicaid expansion states, while 50% of urban low-income adults live in these states" (Sanders et al., 2020, p. 2). Hispanic (any race) people living in rural areas have lower insurance rates than Hispanic (any race) people in urban areas do (Sanders et al., 2020). Non-Hispanic Black people were not as affected by the Medicaid expansion. According to Sohn (2017), non-Hispanic Black people have high uninsured rates because of primarily work in low-paying jobs that do not provide health insurance benefits but make too much to qualify for public assistance.



Losing Insurance and the Risk at all Ages

Racial and ethnic minority groups are more likely to lose insurance coverage than non-Hispanic White people (Sohn, 2017). When racial and ethnic minority groups reach their

40s and 50s, their risk increases significantly. Sohn (2017) compared racial and ethnic minority groups to non-Hispanic White people on years of living without insurance before they turned 65. The results are very concerning; Sohn (2017) found that on average, Hispanic (any race) people live without insurance for 22 years before turning 65. Non-Hispanic Black people typically live 12 years without insurance before hitting 65. While Asian American people spend an average of 10 years without insurance by the time they turn 65. Non-Hispanic White people live less than eight years without insurance before turning 65.

In the United States, 19% of uninsured individuals are non-elderly. About one-third of non-elderly Hispanic (any race) people living in the United States do not have insurance and make up most of the uninsured population (Sohn, 2017). 20% of non-elderly non-Hispanic Black people are without insurance and 18% of non-elderly Asian people are without insurance.

Having a low level of education, being unemployed, unmarried, and being a young adult are all associated with an increased risk of losing health insurance (Sohn, 2017). Sohn (2017) points out that trigger events contribute to increased risk. These events can include but are not limited to losing or changing your job and losing your spouse. It is important to emphasize that a significant influence on how fast you get health insurance again if at all, is dependent on demographic and socioeconomic factors (Sohn, 2017). Furthermore, there is evidence that African Americans and Hispanics experience trigger events and have “ socioeconomic characteristics that are associated with greater insurance loss and slower insurance gain” (Sohn, 2017, p. 185). For example, Non-Hispanic Blacks have the highest rates of unemployment compared to non-Hispanic Whites. Hispanics (any race) are highly uninsured because of language barriers and not working at jobs that provide health insurance (Sohn, 2017). For Asian Americans, their lack of insurance is due to not taking advantage of public assistance and working low-paying jobs that do not have health insurance benefits. However, these low-paying jobs pay too much to be eligible for public assistance.

Residential Segregation and COVID-19

The racism that non-Hispanic Black people experience contributes to their poor health, such as residential segregation (Read & Emerson, 2005). Residential segregation uses neighborhoods to separate racial and ethnic minorities from non-Hispanic Whites (Yang et al., 2016). Segregated neighborhoods usually have higher unemployment and poverty rates (Lahiri & Pulungan, 2021). Living in poorer neighborhoods interferes with access to quality education and employment opportunities, hence higher unemployment rates. Poor health is associated with poor neighborhoods (Lahiri & Pulungan, 2021). Individuals living in these neighborhoods are “more likely to experience poor housing conditions,” and lack access to adequate medical care, health-related resources, and treatment (Yang et al., 2016, p. 12). All of these contribute to the spread of COVID-19 among ethnic and racial minorities.

For instance, in Illinois, during the peak of the COVID-19 pandemic, 20% of the confirmed COVID-19 cases are non-Hispanic Blacks, making up 33% of COVID-19-related deaths (Yang et al., 2016). However, in Illinois, the non-Hispanic Black population only makes up 15% of the population. Yang et al. (2016) explain this disparity as being attributed to the pre-existing social structure. Such as residential segregation could aid in spreading COVID-19 and intensify the racial and ethnic disparities in who gets infected. Yang et al. (2016) suggest that in order to help reduce the gap between racial and ethnic groups, there needs to be a dismantling of discrimination in the housing market.

Another example of the racist practice of residential segregation in the United States is discussed in the study conducted by Read & Emerson (2005). In the United States, immigrants from Africa make up 16% of the foreign-born population, and most of these African immigrants come from countries in East and West Africa (Read & Emerson, 2005). Read & Emerson (2005) found that foreign-born non-Hispanic Black people have better health than native-born Black people in the United States. They suggest that foreign-born Black people are migrating from countries with predominantly African populations and are experiencing significantly less racism and allowing access to more opportunities like education, medical care, and fair housing. Read, & Emerson (2005) hypothesize that Black immigrants' health will worsen over time due to the adverse outcomes that come from exposure to discrimination and racism. This will result in expanding health disparities between Black people and White people.

Patient-Physician Interactions

Without a doubt, primary care providers (PCPs) know the ins and outs of United States health care systems (Saha et al., 2003). Saha et al. (2003) suggested that the staggering differences in relationships between PCPs and patients are alarming because they could factor into the disparities in accessing care (Saha et al., 2003). Overall, their findings point to socioeconomic, linguistic, and cultural factors most likely contributing to ethnic and racial disparities in health care quality. This is seen in reports of racial and ethnic minority patients reporting lower-quality interactions with their physicians than non-Hispanic White patients. To begin with, non-Hispanic Black patients report harmful medical care experiences more than non-Hispanic White patients (Ndugga & Artiga, 2021). These negative experiences include non-Hispanic Black patients and their physicians not believing them. For instance, they were being refused medication for pain and treatment and did not receive necessary tests.

Hispanic (any race) and Asian patients report the lowest levels of cultural sensitivity among their physicians (Saha et al., 2003). Poor health literacy is attributed to lower-quality interactions with physicians for Hispanic (any race) and Asian patients. Cultural sensitivity improved the quality of interactions with physicians for Hispanic (any race) and Asian patients (Saha et al., 2003).

Importantly, when health literacy improved for Hispanic (any race) patients, they used more health services.

Infant Health and Communication Barriers

In the United States, racial and ethnic minority groups disproportionately have higher rates of infant deaths. For non-Hispanic Blacks, there are 11 infant deaths per every 1000 live births (Carratala & Maxwell, 2020). American Indians and Alaska Natives have 9.2 infant deaths per 1,000 live births. At the same time, Native Hawaiian or other Pacific Islander Americans have 7.6 infant deaths per every 1,000 live births. Hispanics (any race) have 5.1 infant deaths per 1,000 live births, and Asian Americans have 3.8 infant deaths per 1,000 live births. Uninsured infants and mothers in the United States have numerous challenges accessing health care (Sanders et al., 2020). Hispanic (any race) mothers

and babies have the highest uninsured rate amongst ethnic and racial groups due to language barriers. Even when Hispanic (any race) families were eligible for Medicaid during the expansion, they did not apply, primarily due to communication barriers. Moreover, the negative impact of communication barriers is also evident in the rate of physician visits for Spanish-speaking Hispanic (any race) people. Compared to non-Hispanic White people, Spanish-speaking Hispanic (any race) people are less likely to have physician visits (Lahiri & Pulungan, 2021). It is important to note that for Asian Americans part of why they are uninsured is because of communication barriers. However, other factors explain their uninsured rate more (Sohn, 2017).



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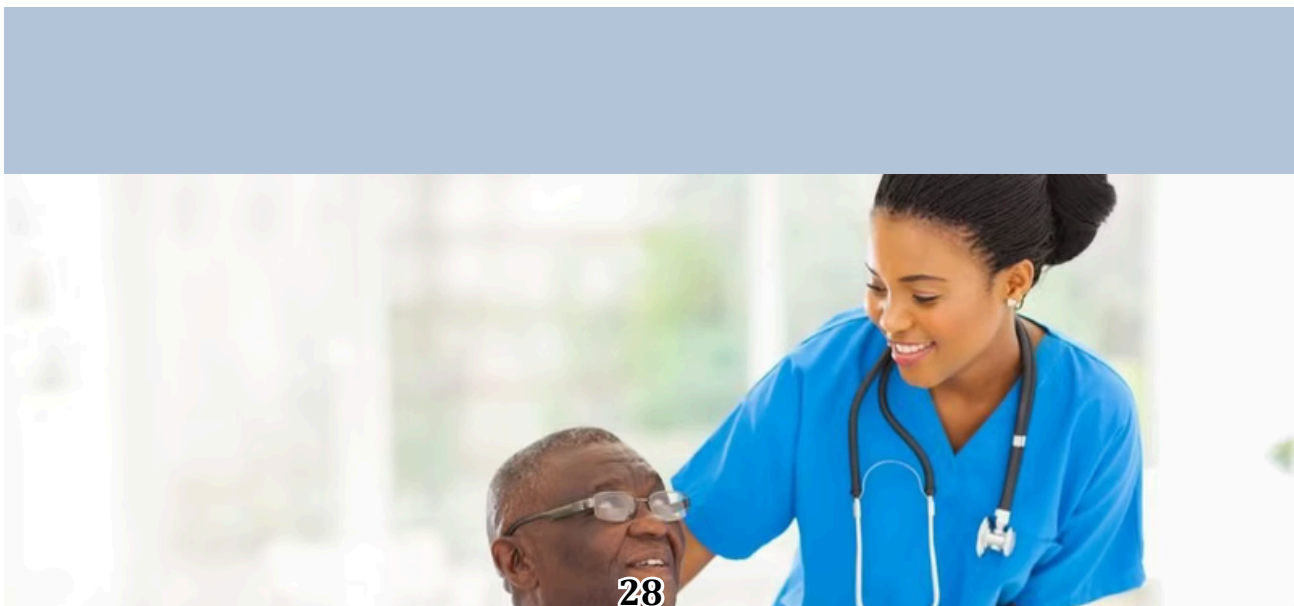
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CULTURAL COMPETENCY AND RACIAL INEQUALITIES IN HEALTHCARE

LIYA MOGES

Abstract: In recent years, cultural competence in health literacy has become increasingly important, especially in addressing racial disparities in medical practice and literature. The term cultural competence in medicine refers to the ability of healthcare professionals to understand and respond effectively to the unique cultures, beliefs, values, and needs of diverse patients. This includes being aware of one's own cultural biases and perspectives and involves not only understanding and respecting the cultural beliefs and practices of patients but also examining the ways in which those beliefs and practices are represented or marginalized in things such as medical texts. By developing cultural competence which includes examining marginalization, or how it occurs, health professionals can work to break down barriers to quality care in marginalized communities and challenge biases and inaccuracies in medical literature that perpetuate racial disparities.



Understanding Cultural Competency in Healthcare

Cultural competency in health care is essential for addressing racial inequalities and improving patient outcomes. Understanding and respecting diverse social and cultural values, beliefs, and behaviors are key aspects of providing quality care to patients from different backgrounds. Research has highlighted the importance of combining cultural competency training into healthcare practices in order to enhance communication, understanding, and respect between healthcare professionals and patients. Embracing culturally sensitive concepts such as those tailored for marginalized communities like Native Americans or Pacific Islander populations, can lead to more positive patient experiences, increased satisfaction, and better health outcomes.

By acknowledging and incorporating cultural factors, healthcare providers can bridge gaps in healthcare delivery and promote equitable treatment for all patients. If providers, organizations, and systems are not working together to provide culturally competent care there are a number of patients that can be at risk for negative health consequences. One example would be how "...African Americans and other ethnic minorities report less partnership with physicians, less participation in medical decisions, and lower levels of satisfaction and care" (Cooper et al.). Other examples would include how there have been noted studies in which the quality of patient-physician interactions is quantitatively lower among non-white patients, particularly among Latinos and Asian Americans, who state that they believe they would have received better care if they had been a different race or ethnicity (Saha et al.) Oftentimes these minority groups will usually voice their dissatisfaction with the care they received by noting that they felt as though their doctor did not understand their background and values, which made it more difficult for them to feel seen or heard during their visit. With these complex issues in mind, it has become the goal of culturally competent healthcare services to begin to focus on providing the highest quality of care to each patient regardless of their ethnicity, cultural background, race, or English literacy or proficiency. A few methods in that have thus been implemented and have shown promise for improving the patient-provider interactions would include; (1) providing an array of interpreter services, (2) recruiting minority staff, (3) providing training (whether it is online or in person) to increase cultural awareness,

knowledge, and skills, (4) incorporating culture-specific attitudes and values into health promotion tools, (5) and providing patient education notes with a variety of language options (Brach and Fraserirector).



Addressing Racial Inequalities through Cultural Competency and Diversity

Without cultural competency, healthcare providers may unknowingly perpetuate racial inequalities and disparities. For example, one area where racial inequalities can manifest is the lack of skin color representation in healthcare texts and resources. The lack of diverse skin models used in medical texts can have a profound impact on the way healthcare providers give care to people of color (Lester et al.) When healthcare texts and resources predominantly depict or focus on white individuals, it sends a message that white skin is the norm, while other skin colors are marginalized and not given the same level of importance or consideration. As a result, healthcare providers may unintentionally overlook or dismiss the unique health concerns and needs of people of color. This can lead to several consequences such as misdiagnosis, inadequate treatment, and ultimately poor health outcomes for these patients.

Moreover, cultural competency is essential for effective communication and building trust between healthcare providers and patients. Understanding the need for a variety of skin tones in medical texts allows healthcare providers to have a sense of curiosity, and determination in order to look further beyond the scope of medical texts in order to provide the best possible outcome for their patients, regardless of the preconceived notions they have been taught through undiversified medical texts. Recent studies show that "...

there is significant underrepresentation of darker skin tones and overrepresentation of lighter skin tones and dermatological texts, General Medical texts, and scientific literature.” An older study, done in 2006, confirms the notion that this inequality has long since been observed and notes a significant find for its time that shows “...the coverage of dark skin and images in major dermatology resources ranged from 4% to 18%...” (Ebede & Papier, 2006). Though it is no direct fault of the healthcare provider or medical student, the one-dimensional presentation of conditions that many providers observe is taught to be identified in one skin tone, which forces healthcare providers to automatically connect to the diagnosis with a one-dimensional approach (Cline et al.) This results in an unaccounted-for limitation in their ability to recognize a condition in other skin tones or include it in their differential diagnosis. This shortcoming can be carried forward in the healthcare environment unless it is meaningfully corrected with cultural competence via education, and though it may seem like a challenging process, it has proven to be a possible feat (Blue et al.)

Promoting Cultural Competency Through Education

There are many strategies that can be put into place in order to promote cultural competency in healthcare. These strategies will play a vital role in addressing racial inequalities and enhancing healthcare outcomes for diverse populations. As evidenced by recent research, cultural competency education programs have shown promising results in improving healthcare workers knowledge, attitudes, and confidence in providing culturally safe care for marginalized groups. By increasing access to comprehensive health services, promoting culturally competent care, and addressing root causes of inequality, healthcare systems can move towards eliminating disparities in several aspects of healthcare and can help improve overall health outcomes. Embracing and implementing strategies for promoting cultural competency in healthcare is crucial for fostering equity, dismantling racial inequalities, and ultimately enhancing the quality of care for all individuals.

In conclusion, it is undeniable that cultural competency plays a crucial role in addressing racial inequalities in healthcare. In this text, the main example of racial inequality that has been perpetuated is the lack of diverse skin models in medical texts. The disparities and health outcomes among different racial and ethnic

groups can be mitigated by healthcare providers possessing the skills and knowledge to effectively communicate and interact with diverse populations. By incorporating cultural sensitivity into medical texts, healthcare professionals can better understand the unique needs and backgrounds of their patients, thereby improving the quality of care provided. As our society continues to become more diverse, it is imperative that the healthcare system adapts and grows in order to meet the needs of all individuals, regardless of their ethnicity or race. Moving forward, it is essential for medical professionals and schools to prioritize cultural competency training and actively work towards creating a more inclusive and equitable healthcare environment for all.



Liya Moges is a graduate from Georgia State University majoring in Biomedical Science and Enterprise, with a minor in Chemistry and Pre-Med concentration. She currently works as a Medical Scribe at Northside Hospital and uses this opportunity to not only shadow physicians, but to understand the importance of medical care in the form of preventative medicine. While working alongside healthcare professionals, and her past internship experience with Diversity, Equity, and Inclusion, Liya continues to foster a strong passion towards health equity, cultural competence in medicine, and awareness for public health measures. Liya's desire to educate the public on these matters has led to her growth and interest in the field of medical journalism, which she has cultivated during the last 2 years as a volunteer Senior Contributor for Today's Patient and our books.

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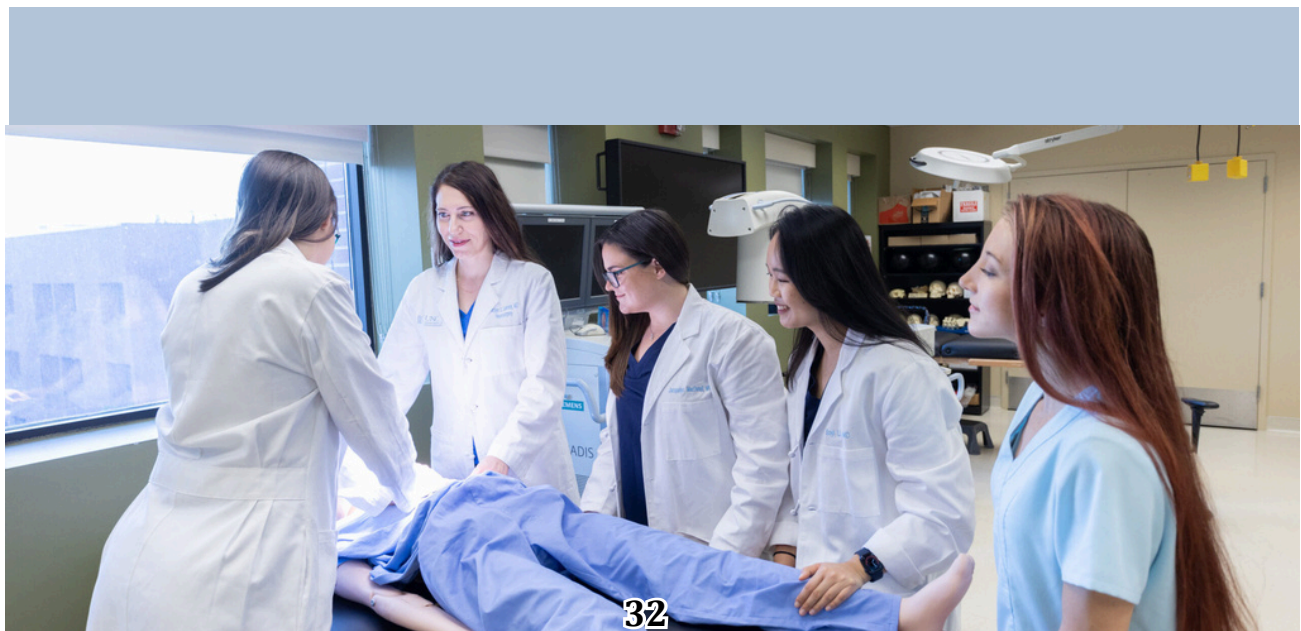
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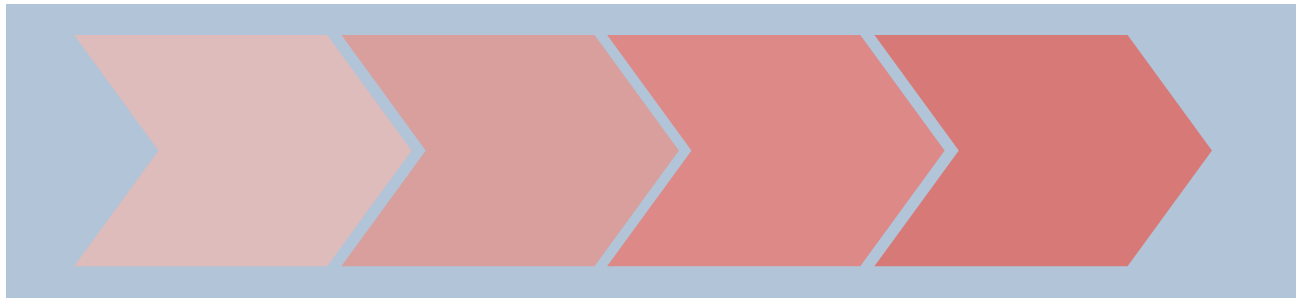
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THE STRUCTURE OF MEDICAL EDUCATION

RITZ BATTULA

Abstract: The path to becoming a healthcare professional, specifically a physician (also termed doctor), is an intellectually demanding and rigorous undertaking, which requires a comprehensive educational structure. The current four-year program for a medical student combines academic excellence, and hands-on clinical experience, and fosters critical thinking skills to prepare for various healthcare challenges and situations. As we explore the medical student curriculum, we will examine the key components that equip our future physicians with the knowledge, skills, and compassion necessary for their integral role in healthcare and the choices they must make throughout their journey.





MD vs DO

After completing pre-medical coursework at a four year university, students apply to medical school. There are two types of degrees a physician can have in the United States: Doctor of Medicine (MD) and Doctor of Osteopathic Medicine (DO). MD institutions are also called allopathic medical schools, whereas DO institutions are called osteopathic medical schools. The application for both MD and DO degrees use a single online application service, AMCAS and AACOMAS, respectively. The application includes academic scores, primary essays, recommendation letters, secondary essays, and interviews. Both also undergo medical school and specialty-based residency clinical training.

The contrast between MD and DO is based on different perspectives to medical care. Allopathic medicine focuses on using evidence-based medicine to treat diseases and symptoms using traditional methods, including surgery and medications. MDs specialize in various medical specialties ranging from internal medicine to surgery. On the other hand, osteopathic medicine includes a holistic approach to patient care. In addition to treating symptoms, similarly to MDs, they also focus on the interaction between the mind, body, and spirit and how they work together to help heal the body. But they also use the same traditional methods MDs use, as described above. DOs receive additional training in osteopathic manipulative treatment (OMT), which is a set of hands-on techniques to diagnose, treat, and prevent injury and illness. Using OMT, a DO uses gentle pressure to manipulate a patient's soft tissues, joints and muscles to promote proper healing and correct any imbalances. DOs emphasize preventive care and mostly take part in primary care specialties. Although it is common thought that MD's are 'better' than DO's, both have similar education, experiences and licensure that allow them to practice medicine.

Pre-Clinical Phase

Although medical school curriculum and opportunities may slightly differ between schools, they generally follow the same framework. The pre-clinical phase takes place during the first two years of medical school where students learn foundational science knowledge in various subjects, including anatomy, pharmacology, and biochemistry. Medical students also learn structures and function of the body, diseases, diagnoses, treatment approaches, and other basic medical concepts.

Furthermore, medical students also learn other fundamental values and concepts that are crucial for success as a physician including medical ethics, communication skills, and professionalism. Various approaches are used to teach in medical school, including problem-based learning, group discussions, exams, dissections, and lectures. Simultaneous use of various methods of teaching allow better understanding of the material for students. The pre-clinical phase provides medical students with critical thinking skills and a foundation of scientific/medical knowledge.



Clinical Phase

The third and fourth years of medical school are called the clinical phase, where students practice in real healthcare settings. Students rotate through various medical specialties in different clinical environments every few weeks, known as rotations. Specialties include internal medicine, pediatrics, family medicine, surgery, emergency medicine, and more. These rotations provide valuable experiences working with other healthcare professionals and patients. Towards the end of the clinical phase, usually during the fourth year, students are able to take elective rotations where they can choose what specialties and environments they would like to rotate at. There are a vast number of electives that students can choose from, depending on the medical school. For example, a medical student may choose to work at an emergency room in an urban hospital or at a community health center in a rural area or even learn about culinary medicine. Both phases play an important role in shaping medical students into knowledgeable, caring, and well-rounded physicians.

Dual Degrees, Tracks and Extracurriculars

In addition to traditional medical education, students have the option to take part in a variety of dual degrees, tracks, programs, and extracurriculars. Dual degrees, such as MD/MBA, DO/MPH, MD/PhD., DO/MHA, allow students to combine medical training with other fields such as, business, public health, research, or healthcare administration. These programs enable interested students to benefit from gaining further skills and knowledge that can apply to a healthcare environment and learn how various fields of study interact. Students can also choose to participate in tracks with specialized concentrations including, global health, health policy, research, and rural medicine. These tracks provide medical students with in-depth knowledge in a specific area of interest, which can also help develop a deeper understanding of the healthcare field. Lastly, extracurriculars offer experiences for students outside the classroom, which include community service, clinical experiences, leadership roles, and research. Extracurriculars not only improve a student's resume and residency application but also strengthens personal and professional growth. Each medical school has different dual degrees, tracks, and extracurriculars they offer. Students may also choose to pursue extracurriculars outside of their medical school, such as shadowing a doctor in their hometown. Furthermore, these dual degrees, tracks, and extracurriculars can also give medical students further things to talk about during interviews, which will help them stand out as an applicant.

USMLE vs COMLEX

The United States Medical Licensing Examination (USMLE) and the Comprehensive Osteopathic Medical Licensing Examination (COMLEX) are two different sets of examinations that medical students and physicians in the United States must take for licensure, depending on their specific medical path. Individuals may choose to take both, or only one. Allopathic (MD) medical students take the USMLE, while osteopathic (DO) medical students take the COMLEX. Usually, DO students also take the USMLE to be a more competitive applicant for residency programs.

The USMLE has three steps. Step 1 is an 8 hour long examination and it assesses the ability to apply science concepts and knowledge to medical practice. In the 9-hour Step 2, students are evaluated based on clinical knowledge and abilities, as well as patient-centered approach to care. The final part is Step 3, a two day examination, which focuses on an individual's ability to apply medical knowledge in a clinical setting and their success in patient management in various healthcare environments. On the other hand, the COMLEX has three levels and specifically includes osteopathic foundations. Level 1 lasts about 9 hours and evaluates osteopathic principles and biomedical science knowledge. Level 2 is also 9 hours, and tests clinical knowledge and skills. Lastly, Level 3 is a two day examination and it focuses on advanced clinical competencies necessary for osteopathic medical practice in various specialties, such as pediatrics, surgery, psychiatry, and family medicine. USMLE Step 1 and COMLEX Level 1 are both taken at the end of the second year of medical school, while USMLE Step 2 and COMLEX Level 2 are usually taken between the end of the third year and the beginning of the fourth year, before residency applications. And finally, the USMLE Step 3 and COMLEX Level 3 are taken during residency, which comes after medical school graduation.



Choosing your Specialty and Applying for Residency Training

Throughout medical school, students must explore which specialty they are interested in through clinical and elective rotations before choosing a medical specialty, such as primary care or radiology. There are also extracurricular options for learning about different specialties, such as specialty interest groups. Most students choose a specialty by their third year and begin to apply for residency training at the beginning of their fourth year of medical school. Residency is a postgraduate specialized training that occurs immediately after medical school, where physicians gain clinical experience and knowledge in a specific specialty that they apply for. Some people may choose to apply to multiple specialties, which requires more preparation. And some people may even choose to take a gap year or multiple gap years between medical school and residency. Each applicant's timeline can be different. The Electronic Residency Application Service (ERAS) submission period for residency programs opens in September of the fourth year of medical school. An ERAS application consists of academic grades, licensing examination scores, personal statements, clinical experiences, extracurriculars, and letters of recommendation

The National Resident Matching Program (NRMP), also called “matching,” facilitates the matching process between residency programs and applicants. After applications have been sent and interviews have been conducted, both parties rank their preferences. For example, applicants rank their choices of residency programs that they interviewed at starting from their top choice to last choice and residency programs rank their choices of applicants they interviewed as well. Next, a computer algorithm matches applicants to only one residency spot. More competitive specialties, which include dermatology and orthopedic surgery, need a higher USMLE and/or COMLEX scores and a better application. It is also important to note that DO physicians have a difficult time in securing a residency position, due to biases and stigma, compared to their MD counterparts. It is possible for an individual to not be matched to a residency program and may have to apply again the following year. Therefore, the residency application, matching process, and choosing a specialty requires strategic planning. A successful “match” leads to a spot in a specific chosen specialty-based residency program and is important in advancing toward a medical career.

Conclusion

This chapter has provided information about the complex structure of medical school, which includes difficult curriculum, clinical experiences, and professional development along with hands-on learning to prepare students for various healthcare situations. It is important to note that there may be slight differences between institutions and states on the structure of medical school, but they generally follow the same framework. Since the healthcare system is constantly changing, so does medical education and training. It is important to understand medical education structure and how it shapes empathetic and competent physicians.



Ritz Battula recently completed her undergraduate studies at Baylor University, majoring in Baylor Business Fellows and Human Resource Management, accompanied by a Leadership in Medicine Minor on the Pre-Medical Track. Throughout her academic journey, she demonstrated exceptional leadership skills by holding seven officer roles in four different student organizations, earning her the distinguished Excellence in Student Involvement Award from Baylor University. Ritz's engagement extended beyond the classroom, encompassing clinical experience, community service, and research, fostering a well-rounded understanding of the intricacies within the realm of healthcare. Her early exposure to healthcare barriers prompted her desire to be a conscientious and effective agent of beneficial change in the healthcare industry and be a leader within the medical profession. Ritz's goal is to use her skills and values to ameliorate the lives of those who just need a little bit more hope and care as a compassionate physician.

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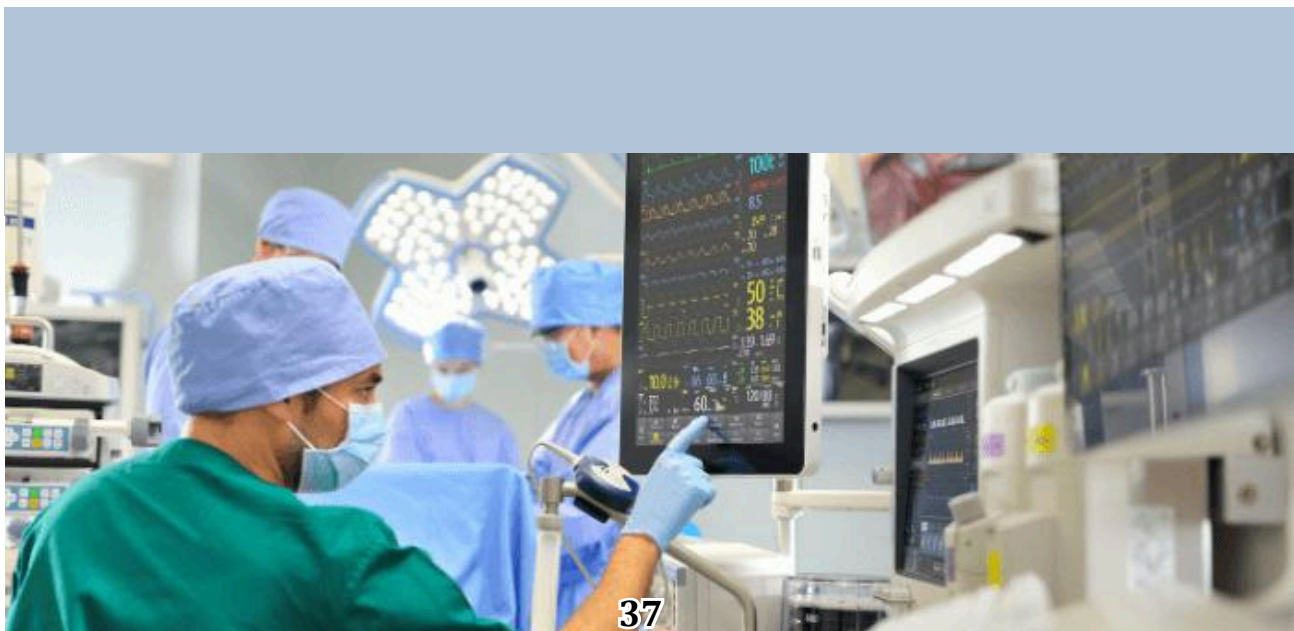
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FUTURE DEMAND FOR MEDICAL SPECIALTIES

FAITH WIDEN

Abstract: Medicine and the United States' healthcare have advanced greatly to accommodate the growing population and new, developing diseases plaguing individuals due to the progression society has made. Thanks to medical advancements, each generation has begun to live longer – which leads to an increased demand for healthcare. This, along with other factors that are new to the younger generations, creates a strain on current medical specialties to keep up with the massive influx of patients; many specialties are facing a shortage, which has only been projected to worsen in the next decade. New and upcoming medical specialties are also emerging to help solve new problems created by current lifestyles and prepare for the future.



In-Demand Medical Specialties

There has been heavy discussion on what specialties are currently in demand the most; Ross University, School of Medicine, has declared ten medical specialties that are the most in demand: Family Medicine, Psychiatry, Internal Medicine, Emergency Medicine, Child and Adolescent Psychiatry, Obstetrics and Gynecology, Anesthesiology, Urgent Care Medicine, Geriatric Medicine, and Hematology and Medical Oncology.

Family medicine's role in providing medical care to everyone gives it a versatile nature that can treat a wide variety of illnesses; it is in high demand due to population growth and generations living longer (American University of the Caribbean School of Medicine, 2021).

Psychiatry has allowed people with mental illnesses to seek helpful treatment and thrive. There are a few reasons behind the increase in demand. Mental illnesses have become more accepted in society and understood, allowing more people to learn and seek treatments for their mental health. In 2019, one out of five people had a mental illness in the United States, making that "a total of 51.5 million people" (Weiner, 2022). After COVID-19, the statistics only increased; pre-COVID, 11% of adults reported having symptoms of anxiety or depression, and during COVID, 40% of adults reported having symptoms (Weiner, 2022). In June 2022, the statistics would decrease to 33% but is still considerably higher than pre-Covid (Weiner, 2022).

There is a current shortage of psychiatrists in the United States. There are more than 150 million people who "live in federally designated mental professional shortage areas (Weiner, 2022). It is predicted that within a few years, the United States will be short between 14,280 and 31,109 workers who specialize in helping those with mental illnesses (Weiner, 2022). The U.S. population growth, lack of residency spots for training, and retiring psychiatrists play a critical role in the shortage (Weiner, 2022).

Internal Medicine is a useful profession because of its versatility; they are trained in both an outpatient and inpatient settings and gain experience in the hospital (Lending, 2021). Because of their training, they can pursue a multitude of subspecialties within internal medicine, and "are the go-to for referrals" (Lending, 2021). This makes them vital within the health industry. The increase in demand is also due to the aging population (Lending, 2021).

Child and Adolescent Psychiatry is in high demand for similar reasons as psychiatry. However, in more recent times, there has been an increase in diagnoses like depression, attention-deficit/hyperactivity disorder, bipolar disorder, and autism among children and adolescents (Axelson, 2019).

Obstetrics and Gynecology are suffering from physicians becoming burnt out because of increased pressures (Kramer et al, 2022). “In one study, 64% of physicians reported experiencing burnout with 31% agreeing with the statement “I want to quit” (Kramer et al, 2022). This has been the cause behind OBGYNs either reducing their hours, retiring early, or leaving the practice completely (Kramer et al, 2022). Another issue is the academic setting has been causing students to struggle. The “pool of clinician-scientists” is hard to maintain because there are limited funds for research (Kramer et al, 2022). The limited funds have also caused physicians to reduce the scope of their research and practice (Kramer et al, 2022). Not only does this affect the knowledge we have on women’s health and bodies, but it makes it hard for someone to become a physician-scientist (Kramer et al, 2022).

Anesthesiology has become in high demand; one reason is because of COVID-19. At the start of COVID-19, between March 2020 to May 2020, non-emergent and elective surgeries were banned as a way to conserve resources, but this has led to a backlog of surgeries (DirectShifts, 2021). Similar to other professions, there has been a large portion of anesthesiologists either retiring early or becoming burnt out from the profession (DirectShifts, 2021). More hospitals are also hiring anesthesiologists instead of outsourcing them (DirectShifts, 2021).

Geriatric Medicine primarily treats older patients. According to the U.S. Census Bureau, it was estimated that in 2019, there were 71.6 million people part of the Baby Boom Generation, making them the generation with the second highest population (Fry, 2020). Because of technological advancements, older people are living longer, making geriatric medicine to become higher in demand to tend to their needs.

The demand for hematologists and oncologists is becoming more essential in the healthcare field due to the same reasons as stated in the previous professions. With the population growing and survival rates for cancer increasing, oncologists are still a necessity to continue helping the aging population (Erikson et al, 2007). Healthcare workers are also aging and retiring more so, similarly to the other professions (Erikson et al, 2007). One problem on the rise is the increasing cancer rates in people under 50 years of age. A study in 2022 found that “multigenerational changes” have exposed younger people to risk factors – such as diet, lifestyle, obesity, environment, and microbiome (Ugai et al, 2022). It was found that each generation is at an increased risk of cancer; Shuji Ogino, a professor at Harvard and physician-scientist, explained how “people born in 1960 experienced higher cancer risk before they turn 50 than people born in 1950, and we predict that this risk level will continue to climb in successive generations” (Sampson, 2022).

Physician Shortages Projections

Physician Specialty	Adequacy 2035 (%)
Allergy and Immunology	90
Anesthesiology	93
Cardiology	83
Colorectal Surgery	100
Critical Care Medicine	88
Dermatology	99
Emergency Medicine	126
Endocrinology	112
Family Medicine	90
Gastroenterology	100
General Internal Medicine	83
General Surgery	104

Geriatrics	88
Hematology and Oncology	99
Hospital Medicine	90
Infectious Diseases	93
Neonatology	110
Nephrology	79
Neurological Surgery	89
Neurology	108
Obstetrics and Gynecology	89
Ophthalmology	70
Orthopedic Surgery	91
Otolaryngology	92
Pathology	85

Pediatrics	98
Physical Medicine and Rehabilitation	107
Plastic Surgery	75
Pulmonology	174
Radiation Oncology	92
Radiology	89
Rheumatology	107
Thoracic Surgery	69
Urology	83
Vascular Surgery	84
Other Specialist	71
All Physicians	92

The United States is facing a physician shortage, with some specialties suffering more than others. The table below was developed by HRSA Health Workforce in November of 2022 to demonstrate the projected adequacy percentage in 2035 of each physician specialty. With the predicted shortages of each specialty, nonmetro areas will suffer the most; nonmetro areas are expected to experience a shortage of 52% across all physician specialties in 2035 (HRSA Health Workforce, 2022). By 2032, it is projected that there will be a shortage of 122,000 primary care physicians (Hawai'i Pacific University, 2023). The reasons behind this are similar to the most in-demand specialties. Within the next decade, one-third of physicians currently working will be in retirement age (Hawai'i Pacific University, 2023). The United States' health is also in decline, with about six in ten adults living with at least one chronic condition that is managed by physicians (St. George's University School of Medicine). With the nation's lifestyle creating these chronic diseases, there has become a huge strain on the shortages (Hawai'i Pacific University, 2023). People are living longer as well, leading to healthcare needs to increase (St. George's University School of Medicine). More people are beginning to afford healthcare through accessing health insurance (St. George's University School of Medicine). One final factor is the medical schools. It is hard to attend medical school, let alone be accepted into it. There are limited spots available at U.S. institutions because of the limited resources available to train new and upcoming physicians (St. George's University School of Medicine).

Emerging Medical Specialties

New specialties are emerging to adapt to our evolving society and provide needed healthcare. Changes to our lifestyle, new perspectives in medicine, and even technological advances have helped sprout these new specialties.

With cancer becoming more prominent with each generation, different steps are being taken to find new ways to eradicate cancer and help patients survive. Cancer immunologists have come forward with a new strategy: our immune system. A cancer immunologist takes the patient's immune system to fight malignancies (AAMC). Research within the field uses new therapies that primarily “target immune cells in and around cancers” (Johns Hopkins Medicine). This research has created the first engineered cancer cell vaccines, as well as other drugs and immunotherapy (John Hopkins Medicine).

With people being in hospitals and staying overnight, they need consistent care throughout the day and night. This leads to nurses and doctors becoming overworked, burnt out, and tired, affecting the quality of care they give to patients. The role of a nocturnist is to help alleviate these healthcare workers by taking the night shift (AAMC). These healthcare providers work in hospitals solely at night and provide the same services as any other hospitalist (AAMC). In 2016, “more than 70% of hospitalist programs [had] nocturnists” with increasing demand (AAMC).



Faith Widen recently graduated in December from the University of Missouri – Columbia with a bachelor’s degree in sociology. During her final semester, she completed an independent study that analyzed recent data on American citizen’s opinion of teaching sex education in public schools. She has a special interest in medical sociology, and she aspires to better her community by using research to create a better understanding of how our society operates. In addition, Faith is interested in gender studies, the sociology of food, and settler colonialism.

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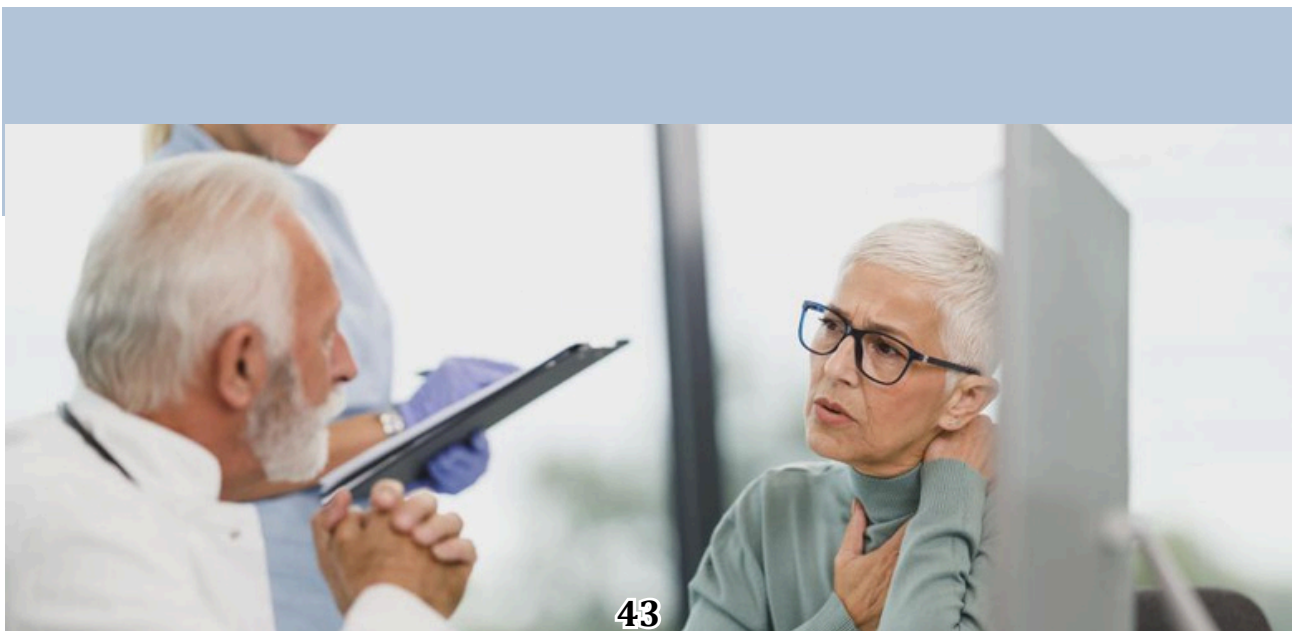
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IMPACT OF PROVIDER AGE ON HEALTHCARE

KYLA GREENSTEIN

Abstract: Medical education in the United States is a lengthy journey, lasting up to 15 years long, where many people would assume it to be necessary to begin the process as soon as possible. However, in more recent years, the average age of medical school matriculants has been on the rise. Age is also a varying factor in doctors depending on medical specialty. In this chapter, there will be information on the age of medical students and doctors, the varying ages in different medical specialties, and the advantages and disadvantages of older vs younger physicians,



Age of Physicians

Definitive Healthcare did a study on the average age of 820,000 medical providers across 110 specialties. As of 2023, the average age of these providers is 53.9 years old, which is around 12 years older than the median age of the U.S. labor force at 41.8 years old. However, these statistics may change in the coming years. While the older population is growing, the population of younger medical school graduates is growing too. According to KFF, the number of medical school graduates increases every year, leading to an increase in younger physicians. The most recent data provided by KFF states that there were 28,753 new medical school graduates (from both allopathic and osteopathic medical schools) in the year 2022. However, just 10 years prior in 2012, there were only 21,802 total new medical school graduates. This continuing influx of younger physicians may continue to lower the average age of physicians, bringing it closer to the average labor force age.

The current physician workforce is fairly evenly distributed between older adults and young adults. In 2021, the AAMC conducted a survey that measured the number of physicians in each specialty based on two age groups: Under Age 55 and Age 55 or Older. Overall, the data showed that 53.3% of physicians were under the age of 55. This makes it so that 46.7% of physicians are age 55 or older. They say “Percentages of [the age 55 or older] age group in individual specialties ranged from 92.4% in pulmonary disease to 9.0% in sports medicine.” Some other significant specialties with the percentage of both age groups are shown in the table made by the American Medical Association below.

This table shows the varying percentages of age groups in different specialties. The difference in age group is most notable in sport medicine, pulmonary disease, and pediatric anesthesiology

Physician Specialty	Active Physicians	Under 55 (%)	55 and Older (%)
Anesthesiology	42,256	43.1	56.9
Critical Care Medicine	14,159	76.3	23.7
Emergency Medicine	46,788	64.0	36.0
Family Medicine	118,392	51.0	49.0
General Surgery	24,864	49.0	51.0
Geriatric Medicine	6,148	62.4	37.6
Internal Medicine/Pediatrics	5,700	83.3	16.7
Interventional Cardiology	4,734	83.9	16.1
Neonatal-Perinatal Medicine	6,0556	55.4	44.6
Neurology	13,847	40.7	59.3
Obstetrics and Gynecology	42,463	52.0	48.0
Orthopedic Surgery	18,458	39.4	60.6
Pain Medicine and Pain Management	6,340	68.0	32.0
Pediatric Anesthesiology	2,843	89.4	10.6
Pediatrics	60,271	52.3	47.7
Preventative Medicine	6,547	28.6	71.4
Psychiatry	38,411	38.4	61.6
Pulmonary Disease	4,865	7.6	92.4
Sports Medicine	3,203	91.0	9.0

Age of Medical Students

Although there is no correlation between age and medical school acceptance, there is a correlation between age and medical school application. As people get older, they become less likely to apply to medical school for several reasons, such as being settled in other jobs, raising children, and a disinterest in putting so many more years into an education. However, this doesn't always stop people who are older than the average applicant from applying. Although several medical school matriculants enter medical school directly after graduating from an undergraduate program, the average age of matriculants is around 24 years old, with the oldest medical school matriculants being in their 60s. According to the AAMC, the age range of matriculants is from 18 to 62 years old, which is a broader range compared to previous years.

Age and Learning

Some may argue that medical students should be older due to the importance and high-risk nature of their jobs and their level of responsibility. On the other hand, some may argue that it is good that medical students are younger because that is when people can learn the most and absorb information. Regardless, each physician goes through rigorous training, examination, and continuous education to get to where they are today. The argument against older matriculants may stem from the general knowledge of reduced neuroplasticity parallel to aging. However, this is a commonly misunderstood concept. According to the National Institute of Health's (NIH) National Library of Medicine, "Practice leads to improvement in...tasks and ... is associated with altered brain activity, occurring similarly in young and older adults." This means that with practice and training, young adults as well as older adults can accomplish tasks at similar levels. Not only are senior physicians just as capable of learning as younger physicians, but they are also important to have around because of their "contribution to the goals of their clinical site, the importance of cumulative clinical skills, and other roles assumed as a senior physician," says the NIH. Because of this, it is important to understand that they are valuable contributors to medicine today.

Technological Advancements and Age

On the other hand, medical technology has and continues to advance quickly and it can be hard to keep up. According to the NIH, senior medical practitioners can have a decline in technological competency with age. Their "digital exclusion [is] caused by difficulties with adopting new technologies." Although these practitioners may have decades of medical experience under their belt, adopting new methods of care and using new technology may be challenging and even discouraging to their practice. Due to the exponential increase of technology use in the past decades, older people are less often adept or exposed to technology compared to younger people, so it may delay the process of adopting new medical technologies. It's important to understand this because the use of medical technology has and will continue to grow. Young physicians also have the advantage of going through medical school and medical residency with learning how to use these current and upcoming medical technologies that may be new and different for a senior physician.

Patient Outcomes and Physician Age Correlation

While older practitioners are valuable and important to the field of medicine, there are some numbers that show more erroneous work from them. According to the Wall Street Journal "Our statistical model found that as doctors got older, their patients had higher mortality rates. The rate for under-40 doctors was 10.8%, increasing to 11.1% in the 40-49 group, 11.3% in the 50-59 group, and 12.1% in the over-60 group." On the surface level, it may seem that older physicians give poorer care, leading to higher mortality rates, therefore older physicians are worse physicians. However, this correlation should be explored more to show why these statistics happen so steps can be taken to reduce this difference in patient outcomes. According to HSA For America, "the study also found that the difference went away for older doctors with higher patient loads. Busy doctors don't seem to lose their edge over time. But semi-retired doctors may not be able to keep up their skill sets as they get older." There are more senior physicians than younger physicians who see fewer patients, therefore having less continuous recent experience treating patients. This correlation is most likely the cause of the diminished patient outcomes, rather than the causation of these outcomes being the age of the physician. It's also important to note the segregation of support



and resources provided to older and senior physicians as compared to younger physicians. “Many participants reported that wellness and physician social equity frequently have not been considered in relation to senior physicians. Wellness is often associated with burnout and stress, and not with needs around aging,” says NIH. It is important to understand that medicine is a difficult and challenging field to work in, and senior physicians may need resources and/or accommodations to perform their jobs properly and effectively. If these resources and accommodations aren’t provided for senior physicians, it may have a negative impact on the patient outcomes as well as the physicians themselves.

Conclusion

Overall, senior medical professionals are a key part of healthcare with their years of practice and life experience and the ability to bring a new perspective to the table. However, there is a plausible concern of older physicians approaching an age where they should no longer practice due to keeping up with the fast advances of technology in the world and in medicine, as well as statistics showing that patient mortality increases with the age of the physician. Hospitals and healthcare companies can help older physicians continue to corroborate good patient outcomes and have a more positive experience working in medicine by extending support, resources, and accommodations to them.

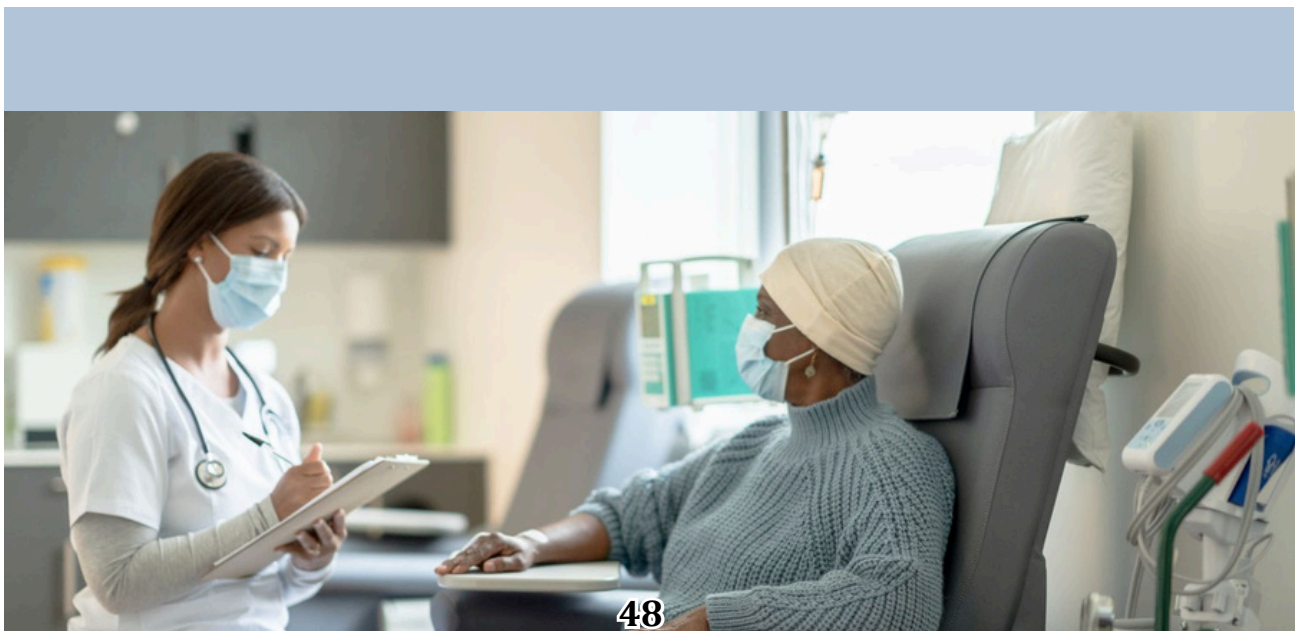


Kyla Greenstein is currently a junior pre-medical student at Northeastern University majoring in Health Science with a minor in Global Health. She has studied abroad in Thessaloniki, Greece with coursework in health sciences, and in Ghana with coursework focusing on global health and health systems, services, and education. She has worked at Beth Israel Deaconess Medical Center on the acute surgical/ trauma floor as a patient care technician, and is now working as a medical assistant at Brigham & Women's Orthopedics. Recently, she was a student research intern at the Center for Health Information and Analysis focusing on hospital readmissions. She currently volunteers at a Red Cross blood donation site, and is the International Humanitarian Law (IHL) leader of her university's Red Cross club's IHL group.

ORIGINS OF CHEMOTHERAPY

TERI HALLIWELL

Abstract: The night of December 2, 1943, saw a devastating German air raid on Bari, Italy, which led to the explosion of the U.S. ship SS John Harvey carrying secret mustard gas cargo. This tragedy unexpectedly catalyzed the birth of chemotherapy, as medical professionals discovered mustard gas's potential to target rapidly dividing cells, including cancer cells. From this grim wartime event emerged mechlorethamine, the first chemotherapy drug. This article traces the evolution of chemotherapy, exploring its origins, the diversity of drugs developed from natural and synthetic sources, and the personalized approach required for effective cancer treatment today.



Bari, Italy, 1943. On the night of December 2, Germany launches a devastating air attack, damaging 40 ships. Among them, is the U.S. ship SS John Harvey, which carries a secret cargo of mustard gas shells that explodes on impact. Soldiers that manage to swim through the fumes of toxic gas, end up with severe wounds and fatal burns.

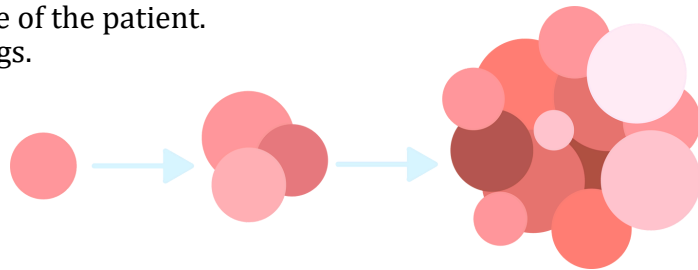
Autopsies of their bodies later revealed that the mustard gas had killed the military personnel's rapidly dividing white blood cells, prompting the doctors to wonder if it could do the same for cancer cells, which also divide and grow quickly.

As a result, pharmacologists were hired to study the effects of mustard gas chemicals on cancer cells, and the first chemotherapy drug, mechlorethamine, was born. It was used to treat lymphoma. Patients showed an incredible improvement and more drugs followed.

That was the birth of chemotherapy.

Today, there are more than 100 types of chemotherapy drugs on the market. Ingredients vary widely and generally include either chemical, plant, or synthetic components. The type of chemotherapy a person receives depends on several factors, including:

- the kind, location, and stage of the cancer.
- the goal of the treatment.
- the health, medical history, and age of the patient.
- the patient's body response to drugs.



The discovery of novel cancer medications can occur through various avenues:

Serendipitous findings: Occasionally, drugs are stumbled upon accidentally. For instance, during the early 1940s, an explosion exposed sailors to lethal mustard gas, leading doctors to observe their decreased white blood cell counts. Subsequently, they explored treating Hodgkin lymphoma with a derivative of mustard gas called nitrogen mustard, exemplified by the drug mechlorethamine (Mustargen). Hodgkin lymphoma, a form of lymphatic system cancer affecting white blood cells, saw nitrogen mustards like Mustargen become integral in its treatment. While such accidental discoveries are infrequent, they can significantly impact medical science.

Exploration of natural sources: Some cancer therapies originate from natural sources, such as plants, fungi, and animals. For example, paclitaxel (Taxol) effectively treats various cancers and was initially discovered in the bark of the Pacific yew tree. Similarly, the cancer medication eribulin (Halaven) stemmed from research on the sea sponge, a marine organism. Institutions like the National Cancer Institute (NCI) maintain vast collections of plant, marine organism, bacterial, and fungal samples from across the globe, aiming to unearth potential new cancer treatments.

Investigation into cancer cell biology: Understanding the biological intricacies of cancer cells can unveil diverse treatment strategies. Typically, cancer researchers commence by scrutinizing the genetic makeup of cancer cells, comparing them with healthy cells, and dissecting their growth patterns. Armed with insights into how cancer cells proliferate, researchers endeavor to develop drugs to impede this process. Additionally, they strive to engineer medications capable of targeting specific cancer-associated genes, thus offering tailored therapeutic interventions.

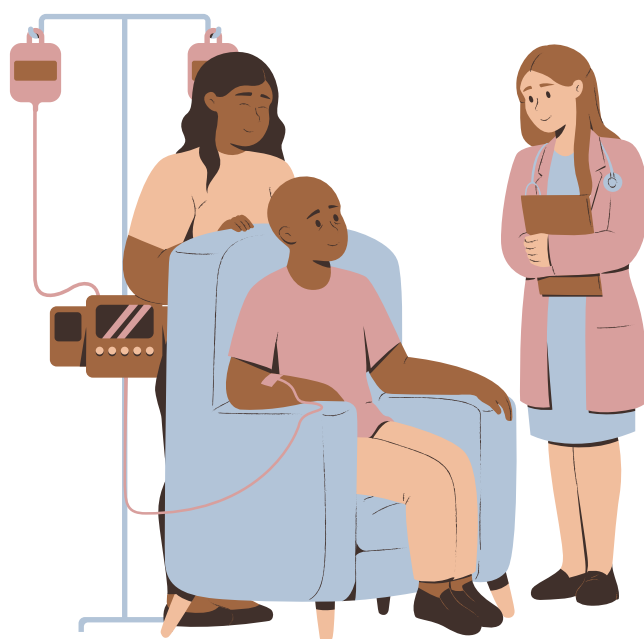
Chemotherapy drugs are grouped by their chemical structures that help doctors decide which drugs work together best to kill cancer cells. The primary types of chemotherapy drugs are:



Whether a poison or a life-saving potion, chemotherapy is one of the big weapons we have against the monster called cancer; it is not a disease easy to understand and fight. That is why the doctor needs to mix and match the variety of chemotherapy drugs and treatments to personalize and target the DNA of your specific cancer.

A word of caution: the Web can be a chaotic and fearful place when searching for information on cancer and treatments. Here are some reliable resources:

- National Cancer Institute <https://www.cancer.gov/>
- American Cancer Society <https://www.cancer.org/>
- National Comprehensive Cancer Network <https://www.nccn.org/>
- American Society for Radiation Oncology <https://www.astro.org/>
- OncoLink <https://www.oncolink.org/>



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