ENVISIONING A FEMINIST MEDICAL EDUCATION

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ABSTRACT

The purpose of this thesis is to examine the patriarchal undertones and overt sexism that informs and takes place within undergraduate medical education (medical school). Using a feminist analysis, I will expose some of the ways in which sexism occurs. This includes at the levels of who is given authority to teach medical students, the biomedical research we are using as our primary knowledge source, what material is chosen to be prioritized vs what is left out of the curriculum, how this material is taught and interpreted, and what the larger cultural and value system is that medical education is embedded in. I will demonstrate how the patriarchal values of masculinity, objectivity, heroism, competition, technicality/procedurality, objectivity, rationality, and so on pervade each of these levels, devalue femininity and non-biomedical sources of knowledge, exclude women, and cause harm to all trainees and future patients.

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CHAPTER 1: WHY REPRESENTATION MATTERS BUT IS NOT ENOUGH

We are currently at a time when there are more women in medicine than ever before. For the first time in history, more women were enrolled in US medical schools (50.5%) than men in 2019. There has also been a rise in women physicians in the US, totaling 36.3% in 2019. However, there is a noticeable drop off between these two values, and women's representation continues to decline as one ascends the hierarchy of academic medicine, a phenomenon known as the leaky pipeline. In 2019, women physicians made up only 29% of division chiefs, 25% of full professors, 18% of department chairs and 18% of deans.[1]

It is important to note that there is not only a lack of women in academic medicine leadership positions, but also significant gender differences between specialties and those considered most prestigious. Women make up the majority of faculty in the departments of OB/GYN (64%), pediatrics (58%), public health and preventative medicine (54%), psychiatry (53%), dermatology (51%), and family medicine (51%).[1] Women full time faculty members are most underrepresented in the specialties of orthopedic surgery (19%), surgery (26%), physiology (29%), biochemistry (30%), radiology (30%) and pharmacology (32%). It is by no coincidence that less prestigious primary care specialties such as OB/GYN, pediatrics, psychiatry and family medicine are made up of predominantly women physicians whereas the more prestigious, procedural specialties such as orthopedic surgery, thoracic surgery, interventional cardiology and neurological surgery are all composed of fewer than 10% women physicians.[2] Thus while there is

much discussion about the "feminization" of medicine, women physicians are very much still marginalized within medicine. These statistics are even worse when accounting for other marginalized statuses. Only 5.3% of faculty physicians and 2.7% of department chairs are underrepresented in medicine (black, latin and/or indigenous) women.[1] Fewer than 1% of all physicians are transgender or nonbinary (TGNB); there is no data on TGNB faculty physicians but we can assume that this number must also be incredibly inadequate.

Excluding marginalized voices from the biomedical sciences has been a long tradition, although in medicine this was particularly exacerbated by the release of the Flexner Report. Abraham Flexner was an educator who conducted an analysis of medical school education in the 1910 report: Medical Education in the United States and Canada (Flexner Report).[3] He suggested standardizing medical school curriculum, increasing regulatory standards for medical schools, and other changes that I will detail later, in attempts to modernize medical education. The report's guidelines were widely accepted and adopted by American medical schools. However, the guidelines required medical schools to have significant financial resources and ties to a university, which caused many lower funded/resourced medical schools to shut down. Many of these underfunded institutions were educating women and black students. After the Flexner Report was released, 5/7 black medical schools and 6/7 women medical schools were shut down.[3,4] Additionally, this time period was during segregation (Plessy v Ferguson) when black students could only go to black medical schools. The ramifications of this are seen today with too few black people entering medical school, and a deficit of black physicians. The

proportion of African American physicians to the population is actually lower today than it was prior to the Flexner Report- 2.2% in 2010 versus 2.5% in 1910.[3]

It is important to recognize that women, TGNB people and ethnic minorities are underrepresented in medicine and excluded from the highest levels of the medical hierarchy for a few key reasons. At its most basic level, representation matters because having role models that look like us helps us see ourselves in that position. At a deeper level, a society or organization that lacks gender/ethnic minorities in their leadership positions is likely one that is engaging in oppressive practices that prohibit marginalized people from reaching the top ranks. Representation of leadership in medical education is particularly important because medical school faculty are given the responsibility of teaching, assessing, and mentoring the next generation of physicians. They directly teach us what we need to do and learn to be successful, and also indirectly model what behaviors and values we need to take on in the process of professional socialization. We should want our future physicians to be taught by people with a diverse set of experiences and backgrounds because this will better prepare us for the complexities and diversities in medicine and human experience. It is easy to see how medical students learning from primarily one perspective can lead them to become narrow minded, and how learning from the dominant (powerful) perspective in particular can lead to ignorance of how social and structural forces have shaped the culture and practice of medicine.

Feminist standpoint theory provides an argument for why increasing marginalized faculty members can improve medical education for everyone. Standpoint theory makes several assertions, one being that science and our sources of knowledge are not objective

and neutral since they are influenced by the biases and positionality of the people creating them and the society they are situated in.[5] It also asserts that collective knowledge from and about the majority group is valued more than collective knowledge from marginalized groups, and therefore the dominant group has the power to determine what we know. It explains how marginalized people can provide significant new insights and collective knowledge, particularly through their better understanding of power dynamics due to their experience of being oppressed. Thus, the marginalized can think more critically about conceptual frameworks and social structures that are taken as the norm.

If we want future physicians to think critically and overcome problems of nearsightedness and unselfconsciousness, then we need to bring in perspectives of those who are marginalized and at the bottom of the hierarchy into medical education.[5] This includes learning from the marginalized perspectives of gender/ethnic minority physicians, nurses, aides, technicians, patients, and academics in the humanities and social sciences. And if we accept that the biomedical sciences (and by extension physicians) are not objective, neutral and apolitical sources of truth (as we should), then we need to examine our own positionality in the process known as reflexivity. This process is important for understanding how our background, experiences and sources of privilege contribute to our subjective worldview. Those in medical education can engage in reflexivity by thinking about how their places of power influence what/how they teach, how this affects people with less power (and may further marginalize them), and how they can contribute to a more socially conscious curriculum and less exclusionary medical institution.

The implicit association test (IAT) is a way to measure implicit bias by assessing the strength of associations between identity groups and stereotypes. One study using the IAT in physicians found that there was a significant pro-white bias in all physicians except those who identified as African American. While still significant, the pro-white bias was not as robust in pediatricians or women physicians.[6] There was also a gender bias amongst physicians on the IAT.[7] Physicians implicitly and explicitly associated men with careers and surgery, and women with family and family medicine. The IAT scores were again lower (less bias) in women physicians. While the IAT has been criticized for its simplistic use of associations, it provides a good starting point for assessing bias amongst medical educators.

Another study analyzed clerkship evaluations of medical students for the presence of gender bias.[8] Faculty evaluators were given a checklist of adjectives they could select to describe students. The authors found that faculty used adjectives that aligned with students' gender roles and were more likely to describe women students as compassionate, sensitive and enthusiastic whereas men students were more often described as quick learners. To counter this gender bias, the authors also offer suggestions to educate evaluators on gender bias and to remove strongly gendered adjectives from evaluators checklist. A study examining science faculty who are looking to hire undergraduate students also found evidence of gender bias.[9] Despite being shown identical applications that only differed in the applicant’s gender, both men and women faculty rated the women undergraduate students lower in competence, hireability, salary and mentorship.

These studies show that although being of the same demographic group can be a mitigating factor against bias of that group, it does not completely absolve them of bias. Everyone has bias (although this does not mean that we should be complacent and not work to overcome these biases). As bell hooks said, "patriarchy has no gender." This brings me to my next point, that representation matters but a liberatory ideology and structural change matter more. We need physicians who practice a liberatory ideology and actively work to end oppression in medical education and medicine as a whole. Although having more gender/ethnic minorities represented in medical education is important, it is not enough. We also need to dismantle the oppressive structures that benefit only the privileged and that reinforce marginalization. We should not help a few individual privileged women rise to the top while leaving the system intact that oppresses other women. As Arruzza et al. eloquently put it: "we have no interest in breaking the glass ceiling while leaving the vast majority to clean up the shards. Far from celebrating women CEOs who occupy corner offices, we want to get rid of CEOs and corner offices."[10]

CHAPTER 2: BIOMEDICAL RESEARCH: ANDROCENTRISM AND ESSENTIALISM

Everything we do, including our pursuit of scientific knowledge is biased by our culture of a capitalist/imperialist/patriarchal/white supremacist society. This has ultimately shaped the research questions asked and the conclusions made, who gets to make research, and who is researched. As briefly mentioned when discussing standpoint theory, there is the misperception that scientific research somehow exists in a cultural vacuum and is objective, value neutral and rational when it is actually based in patriarchy and "a particular kind of logic that embraces heroism, rationalism, certainty, the intellect, distance, objectification, and explanation before appreciation."[11] This is dangerous because the results of these studies can and often are taken as truths and not critically analyzed based on the societal context that they are in. It is even more concerning by the fact that our society places a much higher value on scientific knowledge over other forms of knowledge. This is not to say that scientific research has no benefit, it has made amazing discoveries. My point is that we should not unquestioningly accept scientific knowledge as objective truths, isolated from bias and societal forces, and as the only credible source of knowledge.

The majority of medical education is based in the biomedical sciences and the research gleaned from this field. It is therefore important to examine the sexist and oppressive underpinnings of this foundational knowledge source, and how we in turn can learn, internalize and perpetuate this sexism in medical practice. Throughout this section,

I will provide many examples of how biomedical research is shaped by androcentrism- a way of seeing that prioritizes the male agenda and centers the masculine point of view.[12]

Beginning at the level of basic science research which is used to inform clinical research and our understanding of human physiology, there is already a significant male bias. Cardiovascular journal articles in 2010 only reported cell sex 23.6% of the time.[13] Of those, 68.9% used only male cells, 31.1% used a mix of female and male cells, and none used only female cells. Additionally, the majority of journal articles in biology in 2009 did not report the sex of the animals in their study.[13] For those that did report the sex, there was a male bias in 8/10 of the biology fields and a particularly large male bias in neuroscience (5.5:1), pharmacology (5:1) and physiology (3.7:1). An analysis of the Thomson Reuters Web of Science database for 2009 found that despite anxiety and depression being twice as prevalent in women, fewer than 45% of anxiety/depression studies used any female subjects.[14] Strokes are also more common in women, and only 38% of stroke animal studies used females.[14] In the 15% of animal studies between 1909-2009 that did incorporate animal subjects of both sexes, only 34% analyzed for sex differences/similarities.[13] Therefore, only 5.1% could provide sex specific information.

There are similar findings in clinical research, and there was even an absurd study conducted in 1986 by the Rockefeller University to examine the effect of obesity on breast and uterine cancer that used only men as participants. The field of cardiovascular research also provides many examples of how women have been excluded from clinical research. Despite cardiovascular disease being the leading cause of mortality in women, it has primarily been studied in men. James Herrick is one of the first American physicians,

and is known for his early research on myocardial infarctions (MI). He used only men patient cases to inform his understanding of MI symptoms and etiology.[15] The study that found that statins lower cholesterol used only male participants.[16] The study that found that aspirin reduces cardiovascular disease mortality used only men participants.[16] The Multiple Risk Factor Intervention Trial again used only men participants.[17] The Framingham Study is a more complicated example because the study did use both women and men participants.[18] However, one of the ideas from the study was that estrogen may be a protective factor against cardiovascular disease and *of course* the follow up study was to then administer estrogen to men. This study actually ended early because of high mortality rates in the intervention group. The sexist thinking continues though, and post-menopausal women were prescribed estrogen to reduce their cardiovascular disease risk despite a lack of evidence. As many know, this did not turn out well and many women developed side effects such as cardiovascular events and endometrial cancer. It was not until 30 years after the Framingham Study that a formal study was conducted with women participants that showed that estrogen therapy did not provide cardiovascular benefits and caused harm.[18]

There have been some improvements over time, particularly since the 1990s when the NIH Office of Research on Women's Health was established. The institute made it an important part of the research approval process for women participants to be included and a gender analysis incorporated into clinical research projects. In more recent times, a 2018 study of drug registration clinical trials found that women were about equally represented as men in phase 2 and 3, at 48% and 49% respectively.[19] However, women

participants were underrepresented in phase 1 at only 22% of the sample, a trend that has also been reported by other studies. Cardiovascular research studies also continue to under-represent women in their samples. Different review articles found women participants to compose just 26.8%, 36% and 38.2% of samples on average in cardiovascular research studies.[20,21,22]

I have so far focused on the aspect of who is chosen to be researched, but there is also the aspect of who is doing the researching, and how their work is evaluated and funded. Multiple studies have found evidence of gender bias such as women researchers receiving significantly lower scores on grant renewals.[23] Another aspect is what research questions and topics are selected to study and publish. Based on data from the NIH, there are 34 diseases identified that affect one gender more than the other.[24] It was found that 25/34 (74%) of these diseases are men favored in research funding, meaning that they are either women dominant diseases that are underfunded or men dominant diseases that are overfunded. Only 9/34 (26%) diseases are "women favored" and 4/9 of these were reproduction related. Myalgic encephalomyelitis/chronic fatigue syndrome patients are 75% women, and this disease is the lowest funded relative to disease burden. Additionally, diseases that are more prevalent in men also received about 2x the funding of women predominant diseases.[24] Gender researchers wishing to share their findings with the medical community also face many barriers. One focus group of gender researchers said that publishing in medical journals is very difficult, and in order to publish, they often need to switch the word gender to sex because it is less "inflammmatory".[25] Similarly, the feminist scholar Delese Wear wrote an article on how "proposed fictions

about menopause written by women can enlarge understandings of how women variously experience this process and might be useful in the teaching of menopause to medical students and residents."[5] She sent this to a medical journal which replied: "Please go through the paper carefully and "tone down" the language to make it sound more objective and less emotional."[5]

There is also the aspect of the conclusions and interpretations made from these studies. Since far fewer studies use female animal models, women participants, women researchers, and study fewer topics that relate to women, then we therefore cannot apply these findings to women and we are left with less scientific knowledge about women. Again, scientific knowledge is not the only valuable knowledge, but this is particularly detrimental since we live in a society that views it as the only legitimate form of knowledge. If we have a poor understanding of female predominant diseases or of how diseases present in women, then we will have less information to pass on to medical students and they will then be less prepared to care for women patients. Examples of this include autoimmune disorders which are more predominant in women, less studied in research and medical school, less understood by scientists/physicians, and more poorly treated.

However, another assumption often made is that research findings from males/men can be applied to females/women. A good example of this is cardiovascular research that has a long history of being studied primarily in males/men, yet conclusions made about etiology, symptomatology and treatments have been applied to women. This androcentric assumption is dangerous because it establishes maleness and the "male

model" as the norm and standard. This is problematic in that our conceptions of what is normal, standard, and healthy becomes associated with maleness, and what is abnormal, substandard and diseased becomes associated with femaleness. We see this in how acute coronary syndrome (ACS) symptoms have been described; symptoms more common in women are labeled "atypical." We also see this in the teaching of the reproductive cycle with menstruation pathologized as an emotionally/physically disabling state, and menopause referred to as a deficiency state.[26] Generalizing these findings to women can also be directly harmful to their health. From 1997-2000, the FDA withdrew 10 prescription drugs from the market, of which 8/10 caused greater harm to women. While 4/8 of those because they were more often prescribed for women, the other 4/8 were equally prescribed to men and women suggesting a gender difference that was not previously studied.[13]

My review of biomedical research revealed an abundance of sex and gender bias i.e. female biological systems left out of basic science research, women left out of clinical research and the perpetuation of the male model standard and lack of understanding of how many diseases or drugs impact women. But even when sex and gender was included such as in sex and gender based medicine (SGBM) research, there were still patriarchal undertones of binary thinking, oppositionalism and essentialism and incorrect usage of the terms sex and gender. One study of SGBM research found that of 104 published SGBM papers, sex and gender were only defined in five and six papers, respectively.[27] These definitions were described as simple and unspecific. Thirty-nine papers used sex

and gender interchangeably. This brings into question the credibility of SGBM research claims if there isn't even a basic understanding of the terminology they are using.

Another major problem with SGBM research is its focus on finding differences between female and male biology. In this pursuit, it renders our many similarities invisible, exaggerates many differences that are inconsequential in real life, and risks essentializing males and females as two distinct groups with inherently different and immutable characteristics that everyone in those groups share. It also does not take responsibility for publishing these sex or gender differences, and then society interpreting them as reasons for why women are inferior to men. Furthermore, this essentialist thinking establishes a binary of females/women vs males/men. This is problematic because 1) the binary is false, there are many different variations of sex and gender and 2) this classification system then leads to oversimplified and inaccurate findings. The gender binary is one of many examples of oppositionalist/dualistic thinking that permeates western society. We like to create simplistic and opposing categories such as male/female, white/black, good/bad, normal/pathological, active/passive and so on. In an inequitable society like ours, this dichotomization sets up a hierarchy with one of these categories (the former in each pairing from the previous sentence) being more valued than the other (the latter). Much of SGBM research uses this oppositionalist language and therefore reinforces oppressive power structures.

My last critique of SGBM research is of biological essentialism/determinism: the idea that individuals' characteristics are innate and biologically derived, rather than a product of society/culture. The vast majority of SGBM research only analyzes differences

as they relate to biology and does not examine how social or structural factors may cause different disease presentations or drug responses in women.[27] However, we know that social and environmental factors play a large role in one's health and experience of disease. It is also harmful to use biological processes to explain social phenomena such as gender and race because it can lead to explaining the low social status of marginalized groups as a product of inferior biology instead of as a result of discrimination. It can also lead to a waste of money and time trying to cure societal ills with biologic remedies.

So how can we do better? Hammarstrom and Annandale highlight SGBM studies done by Alessandra Graziottin and Sarah Payne that incorporate the social dimensions of disease, gender similarities along with differences, the interaction between sex and gender, and themes of complexity and plasticity.[27] Moreover, feminist approaches to epistemology (knowledge production) argue that a gender analysis should be conducted at every stage of the research process. This means that all genders should be involved in the development, participation and application of research. Implementing these approaches in biomedical research will be critical in our understanding of how sex and gender pertain to health and disease, and our ability to accurately teach these concepts to medical students.

CHAPTER 3: A FEMINIST APPROACH TO TEACHING MEDICINE

The first two years of medical school in the US are called the preclinical years- a time devoted to learning biomedical sciences in lecture halls and workshops, and studying from textbooks and online resources. The curriculum is focused on the following topics: Anatomy, Biochemistry, Cell biology, Evidence Based Medicine, Genetics, Histology, Immunology, Introduction to Clinical Medicine, Microbiology, Neuroscience, Pathology, Pharmacology, and Physiology. The last two years of medical school are known as the clinical years- when students learn from doing supervised patient care in hospitals and clinics, and rotate in various specialties such as Family Medicine, Neurology, Pediatrics, Psychiatry, Ob/Gyn, Internal Medicine and Surgery.

In medical school, the biomedical sciences that were previously listed are prioritized, but there has been some recent integration of the social sciences/humanities in the form of lectures on communication, social determinants of health, bioethics and health policy. As most medical students will tell you, the amount of biomedical science information expected to learn during medical school can be quite overwhelming since the discoveries in this field continue to rapidly expand. Thus, there is a growing concern about the amount of material medical students are expected to learn- the ever increasing knowledge in biomedical sciences, as well as newer curriculum content in the social sciences/humanities.

Some medical educators believe that to reduce this burden and so called “crowded curriculum”, medical education should revert back to studying only the biomedical

sciences since social science/humanities content just further exacerbates this issue. Furthermore, a study of medical school faculty opinions on incorporating gender into the curriculum found that many were opposed to this and considered gender "not relevant," "self evident" and a political rather than medical issue.[28,29] I argue that incorporating social sciences/humanities and particularly the concept of gender into medical education is essential to a feminist medical education. As I have already discussed, it is problematic to have our future physicians only learn the biomedical sciences since this creates a very narrow lens through which to practice medicine and treat patients. We want future physicians with empathy and compassion, who try to understand where patients are coming from and the larger context they are situated in.

Instead, I believe that medical school curriculum needs an entire ideological restructuring in order to address the issue of the "crowded curriculum" among other issues. The way that we currently think about medical education is largely informed by Abraham Flexner and The Flexner Report. I mentioned previously how this report led to the exclusion of marginalized people from obtaining medical degrees, but it also made large contributions to how we currently teach medicine. The Flexner Report endorsed a medical education that is hyper-rational, adherent to the scientific method and prioritizes the production of scientific knowledge, thus making biomedical science the dominant form of knowledge in medical education.[30] It also inadvertently led to medical education focused on learning "scientific facts" rather than learning through a "scientific lens." Abraham Flexner advocated for an intellectual, scientific method based approach to learning that incorporated different forms of knowledge (sciences and humanities). But

what was taken from his report instead was implementation of scientific material into curriculum and treating science not as an intellectual approach but as curricular content. Additionally, there was a consequent decreased emphasis on the humanities, and the caregiving qualities required by physicians. Fifteen years after his report was released, Flexner expressed discontent with this change saying, "Scientific medicine in America – young, vigorous and positivistic – is today sadly deficient in cultural and philosophic background."[30]

There are a few key problems with this framework for medical education. The first is medical education using science as an object/content to learn, rather than using science as a way of thinking. This leads to a more passive way of learning (memorizing facts) rather than actively working with material, questioning it and critically analyzing it. The framework then expects scientific material to be added to the curriculum as it is discovered, thus causing a second problem of requiring medical students to learn seemingly endless content and the idea that there is "too much" scientific advancement. A third problem is that the abundance and prioritization of biomedical science curriculum leads to the marginalization of other sources of knowledge i.e. social sciences and humanities that are mere afterthoughts in medical school curriculum. This has contributed to our current hyper-rational "for the pursuit of science" medical culture in which "physician as scientist has taken precedence over physician as healer."[31]

By accepting scientific knowledge as infinite and impossible to fully incorporate in four years of medical education, we can move on to better ways of teaching medical students that considers their limitations as human beings and also the humanistic qualities

needed in future physicians. After all, we are told when we enter medicine that values of compassion, empathy, honesty, integrity, altruism, respect, kindness, and humanity are central to being a physician. If we instead apply science as a way of critical thinking, we can create a medical education that has time to discuss different forms of knowledge and employs a more holistic approach to medicine and patient care. A feminist approach would balance out our curriculum so that we are not prioritizing masculine ways of knowing that focus on rationality, objectivity, individuality, the "hard sciences" and "physician as scientist" over more feminine ways of knowing that incorporate intuition, empathy, holism, the "social sciences" and view of "physician as healer".[11]

Not only can we incorporate a feminist approach to the material being taught, but also the way that it is taught. Many medical schools currently employ a "banking model" approach in which educational material is "deposited" into students' "mental vaults".[32] This knowledge is considered a privileged gift that is received by the student who is worthy and empty of knowledge. In this process, the student then memorizes and withdraws this knowledge at the command of the clinician teacher, also known as "pimping." This education model establishes an unequal power dynamic where the teacher is the holder of all knowledge, and the student holds no knowledge. It also designates that learning is something done *to* students rather than something they engage with. Overall, the "banking model" makes the student subservient to the teacher and the material itself, often requiring them to place greater value on learning the knowledge than on their own needs.

A feminist counter approach would encourage students to ask questions and challenge answers with teacher and student in a mutual learning process, exchanging ideas and sharing knowledge.[32,33] Both teacher and student input would be valued and there would be a respectful, more egalitarian relationship between them. Instead of the teacher being considered the holder of all knowledge, they would be the facilitator of knowledge. Students would be empowered to be curious learners and critical thinkers, and not just regurgitate facts outlined to them. There should also be an understanding that no material and no person holds objective, true knowledge since everything is in context and constantly evolving. This thinking is slowly making its way into the medical school classroom with Practice Based Learning which has groups of medical students work through patient cases together under the guidance of faculty. This approach encourages students to actively engage with material, work collaboratively, and has the potential for teaching medical cases in a more patient centered, contextual and holistic way. Not only is this collaborative approach beneficial for student learning, but it can also improve how students learn to interact with future patients. Instead of being taught that all medical knowledge comes from them (future physicians), they are taught that physicians and patients arrive at solutions together.

CHAPTER 4: THE HIDDEN CURRICULUM

The medical curriculum that I have so far discussed- preclinical material in anatomy, physiology, immunology, cellular biology, etc. and clinical material in family medicine, neurology, internal medicine, etc.- is what is called the "formal curriculum." The formal medical curriculum is the material that is intentionally taught and outlined in the curriculum. It also includes the explicitly stated values of critical thinking, communication, proficiency, patient safety, compassion, integrity, altruism, etc. Many medical schools will outline these values on their university website similarly to the following statement provided by the Lewis Katz School of Medicine at Temple University:

> "Temple has emerged as a leader in humanistic education for the next generation of physicians. Well-positioned for a lifetime of learning, our graduates discover and treat disease with an overarching goal of providing outstanding, compassionate care for each patient. We have a unique focus on service to others, a special connection to our community and a commitment to our neighbors that becomes a way of life, not just a part of our curriculum. With supportive faculty by your side, it's where you will begin to master both the science of medicine and the art of caring for human beings—as well as establishing friendships, collaborations and identification of mentors."[34]

However, there is also what is called the "hidden curriculum" which plays a large role in medical education and consists of the unintended messaging and behaviors taught to medical students. Although I believe that the hidden curriculum becomes more pronounced during the clinical years of medical school since learning in the hospital setting has less structure, it is present since the first days of medical school. It is largely learned informally by students role modeling behaviors, attitudes, and professionalism and communication skills displayed by physicians. There are also formal components to the hidden curriculum, such as the underlying values that students learn from patient cases, faculty lectures and textbooks. The hidden curriculum is not good or bad per se but allows the implicit beliefs and behaviors of medical professionals and the larger medical system to 'fly under the radar' and be ingrained in the next generation of physicians. As Jaye et al claim, it is problematic in having the "potential to undermine the learning objectives of the formal curriculum."[35]

Additionally, studies examining the hidden curriculum have found that it mirrors much of the patriarchal/white supremacist/capitalist values in our society such as maleness, whiteness, competitiveness, emotional detachment, objectivity, rationalism, heroism, toughness, aggression, and antipathy for weakness.[35] This subliminal messaging has the potential to perpetuate discriminatory tendencies, leading to a noninclusive medical environment with unequal opportunities to succeed. It is therefore important that we thoughtfully examine the "hidden curriculum"- what it consists of and the consequences of this on medical student experiences and learning.

Formal Content

First to be examined are the patriarchal/white supremacist/capitalist values found in the formal content. There were many examples of sexism found in formal medical school lectures and textbooks such as women being discussed in derogatory or subservient ways, or simply not discussed at all. One area that has been well documented by Emily Martin and then again by Campo-Engelstein & Johnson is in medical textbooks discussion of fertilization.

Gender norms dictate that men should be strong, capable, heroic and powerful whereas women should be meek, passive, and dependent on and in need of saving by men. Textbook chapters on fertilization have been found to apply anthropomorphic gender roles onto gametes such that sperm are described by these masculine traits and eggs with feminine traits. Sperm are often portrayed as a hero on an arduous journey to find the egg while the egg passively and helplessly floats down the fallopian tubes waiting for the sperm to penetrate it.[36] Martin summarizes descriptions used by various medical textbooks below:

> "The egg is seen as large and passive. It does not move or journey, but passively "is transported," "is swept,"' or even "drifts"' along the fallopian tube. In utter contrast, sperm are small, "streamlined," and invariably active. They "deliver" their genes to the egg, "activate the developmental program of the egg," and have a "velocity" that is often remarked upon. Their tails are "strong" and efficiently powered. Together with the forces of ejaculation, they can "propel the semen into the deepest recesses of the

vagina." For this they need "energy," "fuel," so that with a "whiplashlike motion and strong lurches" they can "burrow through the egg coat" and "penetrate" it."[36]

One textbook in 1984 went so far as to describe the egg and sperm in terms of Sleeping Beauty: "a dormant bride awaiting her mate's magic kiss, which instills the spirit that brings her to life."[36] These descriptions are sexist and inaccurate- we know that eggs play an equally important and active role in the fertilization process. Although not as egregious, current medical textbooks continue to use sexist language in descriptions of egg/sperm. Campo-Engelstein & Johnson conducted a more recent analysis in 2014 and found that textbooks more often structure their description of fertilization as sperm first, and sperm as active participants, whereas eggs were portrayed as passive, quiescent, and discussed secondary to sperm or not at all.[37]

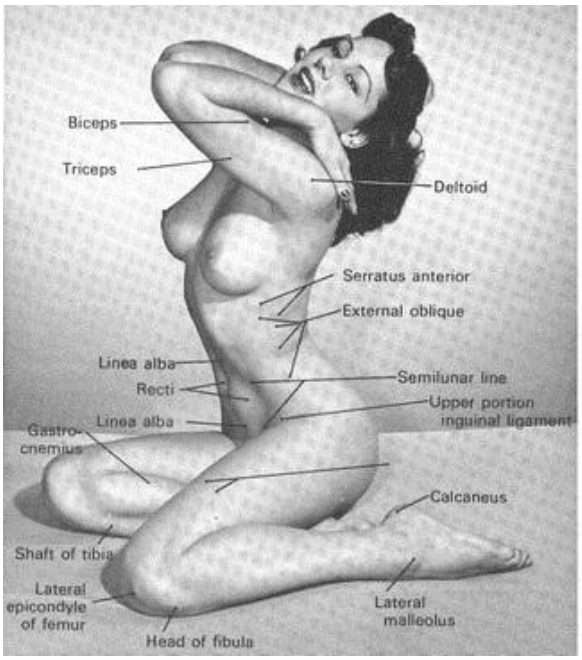
Martin also documented many instances in which female reproductive anatomy was discussed in derogatory terms such as "wasteful", "degenerative" and "battered" compared to the "remarkable" and "amazing" feats of the male reproductive system.[36] Current textbooks were also found to use similar unbalanced language and describing the vagina as a hostile environment for sperm while neglecting to mention the favorable environment of the cervix for sperm.[37] Campo-Engelstein & Johnson also found a disproportionate amount of material on male infertility, sexual arousal, and sexuality but none for these processes discussed in women. In discussing the increased blood flow during sexual arousal, an explanation was only offered for how this occurs in men. Some textbooks included close up diagrams of only the male reproductive system.[37]

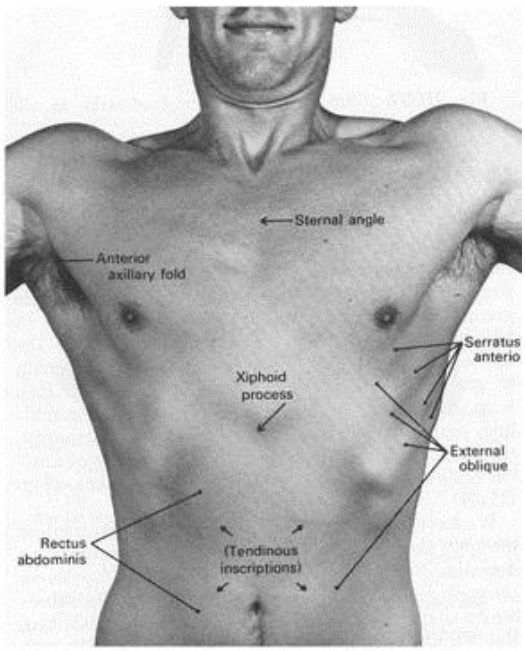
The majority of the material on reproduction and fertilization focused on reproductive functionality rather than human sexuality, and often conflated the two. It reinforced heteronormativity and prioritized male over female sexual pleasure. For example, vaginal lubrication was not described as how it pleasures women but how it aids the male penis and sperm. There was barely any mention of female orgasm and when the female reproductive system was detailed, it often did not label the clitoris.[37]

Outside of medical materials on fertilization, there was also sexism found in medical school anatomy textbooks. One anatomy textbook published in 1971, titled "Anatomical Basis of Medical Practice" was full of sexual and denigrating photos and comments about women's bodies. One excerpt relating to the back muscles read:

> "If you think that once you have seen the back side of one female, you've seen them all, then you haven't sat in a sidewalk café in Italy where girl watching is a cultivated art. Your authors, whose zeal in this regard never flags, refer you to Figures III–IV and VIII as proof that female backs can keep an interest in anatomy alive."[38]

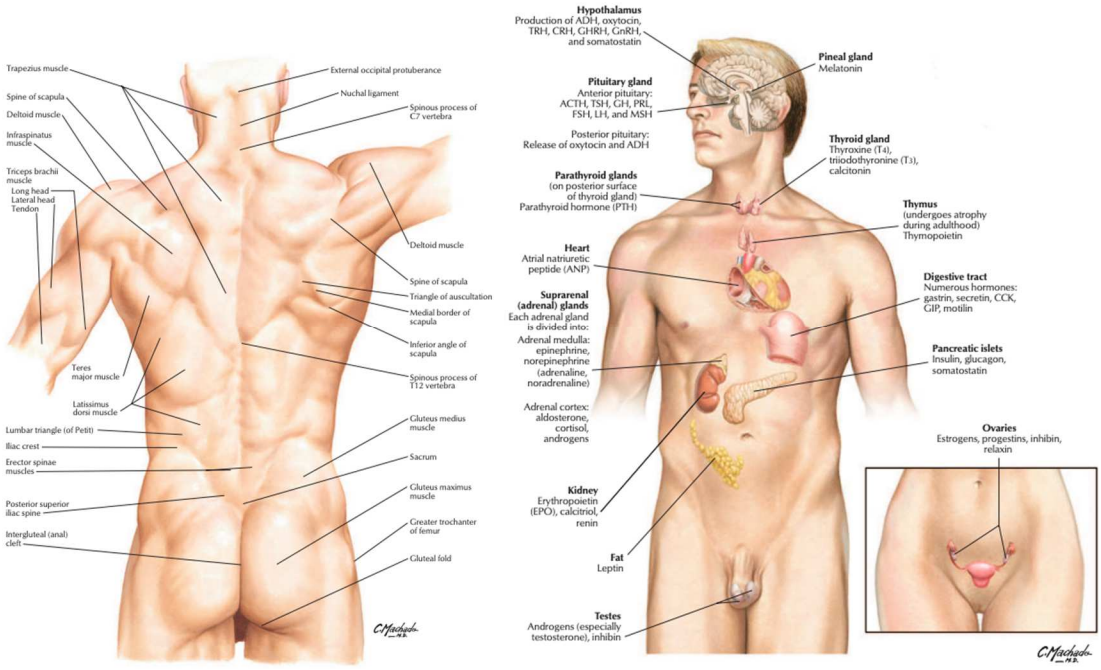
Textbook images of women's bodies were styled to be sexually suggestive in comparison to men's bodies:[39]





Although this textbook was eventually removed from the market, our current medical textbooks continue to have sexist themes particularly around androcentrism. One study analyzed 6044 images in 17 major anatomy textbooks published 2008-2013 and found a male, white and ableist bias.[40] Significantly more images in anatomy textbooks featured men, except in the category of sex specific images (reproductive anatomy) which had more female bodies. There were only 5 images of intersex bodies of the total 6044. There were significantly more white bodies (~80%), and the female bodies were more likely to be white than the men. The majority of women's bodies were depicted as toned (73%) and the majority of men's bodies were muscular (65%). Men's bodies were 42x more likely to be muscular than women's bodies. Only 2.7% of all images depicted a disabled body, and they were more likely to be women. Although there were few images of young adults, the majority were women.[40]

The following are examples of typical images in today's anatomy textbook:[41]



The image on the left is being used to depict back muscles and the images on the right are depicting the endocrine system. Notice how the image chosen for back muscles was that of a muscular, white man. And despite there being male and female components of the images for the endocrine system, the man is the larger and more centralized image compared to the image in the corner that is not even of a woman but her uterus. The dominance of white male bodies could be frustrating for marginalized medical students who do not see themselves and their communities reflected in these medical images. It is also harmful for medical students to study such a narrow subset of body types when this is not representative of the population and so few of our patients will look like this.

Androcentrism and white-centrism continues into the lectures given in medical school. A study on the preclinical lecture images chosen at the University of Washington Medical School found that 60.5% were men and 39.6% women.[42] Roughly 78% were white and 22% of color. Similar to the findings from the anatomy textbook study, there

were only more images of women (62.4%) in the lectures on reproduction. When this outlier was subtracted from the data set, 62.7% of images were of men and only 37.3% were of women.

Beyond just representation of women in the formal curriculum, it is also important to look at if and where gender analysis is incorporated. Only 8.1% of medical school classes were found to include in depth discussions on sex and gender.[43] A study looking at where sex and gender based medicine (SGBM) material was taught, found it to almost exclusively reside in the reproduction courses and not at all in cardiology and pharmacology courses.[44] Another study looking at medical textbooks found the same results, with minimal SGBM material discussed in medical textbooks but when it was, it was only in reference to epidemiology and reproduction.[45] In addition to SGBM being limited to only discussions about reproduction, it was also often siloed in a separate chapter or discussed in terms of biological differences and not sociocultural and gender related health behaviors.[45,46] The overall conclusion is that the formal medical curriculum is deficient in women's health and gender analysis, and even when this material is infrequently provided it is insufficient in providing a full gender analysis that incorporates social experience and the whole body outside of just women's reproductive organs.

All of these studies found women and women's health to be underrepresented in medical materials except for in the topic of reproduction. This phenomenon has been well documented throughout medicine and referred to as "bikini medicine." It is the (incorrect) idea that women's health only pertains to their reproductive organs and not

their whole body and life experiences, and therefore women's health is only worth studying as it pertains to their reproductive organs. By extension, it also implies that women are only different from men because of their reproductive organs and therefore men can be used as the standard for all other medical topics. It also relates back to our societal gender roles, and how we see womanhood defined by being a mother.

I have found three great examples of how we can improve the formal medical curriculum to be less sexist and take into account gender analysis and women's experiences.[44,46,47,48] The first approach suggested by Petra Verdonk in the Netherlands is to provide education around the concepts sex vs gender and to integrate gender analysis material into the curriculum.[44,46] It would be beneficial to explain how gender is a social category and therefore material on gender differences should include an analysis of how gender inequity in our society contributes to these differences. Like race based medicine, there is a tendency to falsely attribute differences based on biology rather than social conditions. Instead, the curriculum could include discussion on the minority stress model and how social stressors such as stigma and discrimination can lead marginalized groups to have poorer health outcomes. Along similar lines, curriculum should then provide both biomedical and sociocultural content such as gender differences/similarities in cardiovascular pathophysiology but also societal issues such as domestic violence that disproportionately impact women's health. Additionally, they proposed that the following should be incorporated into curriculum: transitional phases such as menopause and adolescence; pharmacotherapy; cardiovascular disease; urinary tract infections and other micturition complaints; urinary incontinence; reproductive issues like contraception,

sexually transmitted diseases and infertility; eating disorders and obesity; addiction to alcohol and benzodiazepines; depression and anxiety disorders; sexual abuse and violence, child abuse and partner violence; post□traumatic stress disorder; sexuality and sexual identity, sexual problems; communication; gender and culture; and gender□ specific health care.[46]

A second example by Müller & Crawford-Browne also established five guidelines for successfully incorporating gender into the curriculum.[47] First, a knowledge base about the experiences of marginalized patients and medical students needs to be developed. Second, medical schools need to bring in experts on these topics such as those in gender studies or who are part of civil society organizations. Third, curriculum must be inclusive of all genders and sexualities such as by incorporating cases that have LGBTQ+ patients. Fourth, medical education needs to challenge the false claims of neutrality and objectivity in science/medicine. And fifth, faculty need to also be educated on these topics via seminars, symposia or journal clubs.

A third, very extensive outline made by Susan Phillips is shown in the tables below:[4]

Table I. Goals and objectives in women's health and gender issues

1. To recognize that health involves emotional, social, cultural, spiritual, and physical well-being and is determined by an individual's social, political, and economic context, as well as by biology
2. To explain the breadth and depth of research in women's health, as well as the limitations of medical knowledge in this area
3. To evaluate the effect of personal biases and limitations resulting from socialization and gender and racial stereotypes
4. To recognize the existence of power differentials in relationships, particularly the relationship between doctor and patient and to
    a. Explain the sources of power imbalances
    b. Suggest ways to minimize the effect of the imbalance between doctor and patient
    c. Describe the variety of manifestations and consequences of power differentials
    d. Identify ways that gender, race, class, culture, ethnicity, ability/disability, age, and sexual orientation can affect these differentials
    e. Behave in ways that enhance empowerment of the patient and minimize the hierarchical nature of that relationship
5. To use gender-sensitive language and behavior to minimize the negative impact of gender stereotypes and to foster respect for the equality, individuality, and value of all people

More specific objectives of relevance to specific disease entities include being able to answer the following questions:

1. Are the symptoms of a particular disease the same for women and men (eg, chest pain, depression)?
2. Are the findings for a particular disease the same for men and women (eg, chest pain, depression)?
3. Is the etiology of a particular disease the same for women and men (eg, substance abuse)?
4. Are there differences in the appropriate investigation of particular findings between men and women (eg, headache, abdominal pain, chest pain, back pain)?
5. Is treatment of a disease the same for men and women (eg, dosage, treatment during pregnancy or lactation, timing of treatment and menstrual cycle)?
6. Are risk factors for a particular disease the same for women and men (eg, lung cancer, angina)?
7. What are the symptoms, signs, and treatment of a particular disease when the patient is pregnant?
8. How does a relative lack of control over one's home or workplace affect health and the treatment of illness for women and for men?
9. Do wealth and health interact differently for men and women?
10. What are the social determinants of a particular disease?

More specific objectives regarding gender-based analysis of research evidence include being able to answer the following questions:

1. Is there gender bias inherent in the hypothesis of a study?
2. Is the inclusion or exclusion of women as participants in a study appropriate?
3. Does data analysis properly identify results by sex?
4. Can findings from studies that exclude particular groups, such as women, children, or particular races, be generalized and applied to those groups?

More specific objectives regarding language include being able to answer the following questions:

1. How does language used by the physician either reinforce or minimize gender stereotypes?
2. How should the physician respond to patient communication patterns that reflect gender or racial stereotypes?
3. When is gender-neutral language appropriate? When is it inappropriate?
4. How can the physician use language to minimize the power imbalance between doctor and patient?

Table II. Testing the objectives

1. Can the candidate take a comprehensive women's health history?
2. After a clinical scenario is presented in an OSCE, the candidate should be asked how his or her approach to the patient would be altered if that patient were of the opposite sex.
3. Candidates should be asked to critique research results that show gender bias (eg, failure to analyze by sex or extrapolation of results on testing of men to apply to women).
4. After the candidate is presented with the abstract of a study including men only, the student should be asked to apply the findings to the case of a woman with the illness studied.
5. Candidates should be asked to identify differences in etiology, pathogenesis, clinical presentation, and treatment of disease between men and women.
6. After viewing a brief video illustrating control of or lack of respect for a patient by a physician, the candidate should be asked to comment on the observed interaction.
7. Candidates should be asked to identify sources and effects of power imbalances in the doctor-patient relationship.
8. In any clinical encounter, one of the behaviors to be evaluated should be whether students demonstrate power-sharing with the patient (eg, a hormone replacement therapy scenario could be used to assess whether the student works with the patient to minimize power imbalances, or instead, advises specific treatment).
9. The OSCE format could be used to assess awareness of violence as a cause of a patient's presenting symptoms and signs.
10. One aspect of boundary issues could be evaluated during an OSCE, with a simulated patient of the same sex as the candidate, by having the patient ask the candidate for a date.
11. Boundary issues should be further tested in a clinical OSCE by creating a scenario that requires the candidate to ask a patient to undress, to describe appropriate disrobing and draping, and to explain why the patient should be allowed to undress alone.

Informal Content

The hidden curriculum in medical education also includes informal learning- the values, attitudes and behaviors that medical students learn and emulate from physicians. Despite medical schools proclaiming values such as empathy, humanism, collaboration and altruism, I will show how the reality is more complicated than this. At the same time that medical students are asked to display these humanistic qualities, they are working within a medical system and culture that tells them that they need to work long grueling hours, compete with each other over who gets better grades and more awards, and emotionally detach themselves from patients to avoid burnout. I argue that many of these opposing values stem from our pervasive patriarchal/white supremacist/capitalist culture that promotes masculinity over femininity, white over black, activity over passivity, toughness over tenderness, objectifying over humanizing, emotional detachment over empathy, procedurality/ technicality over personal care, competition over collaboration, hierarchy over egalitarianism, exclusion over inclusion and so on. The following sections highlight a few of these values that medical students are indoctrinated under, and help us examine the informal curriculum by hearing directly from medical students and physicians about their interactions within the medical system.

Competition

Before even arriving at medical school, students are required to compete against other incredibly talented, accomplished and intelligent applicants just to get in. The typical pre-med application consists of a near perfect transcript of classes in biology,

chemistry, biochemistry, physics, neuroscience and humanities courses, volunteer work in hospitals or the community, leadership positions in clubs and extracurriculars, scientific research with presentations and maybe publications, and a stellar score on the 7.5 hour long Medical College Admission Test. In the academic year 2021-2022, 62,443 students applied to medical school with only 22,666 being accepted (36%) and with the majority of medical schools having acceptance rates that range from 1-10%.[50,51] One recently admitted medical student recalls being told the following from a physician:

> "There are hundreds of people who would kill to be in your spot right now."[49]

Once accepted into medical school, students find themselves in an even more competitive pool of peers all vying for the best opportunities and connections to get them into the most prestigious residencies. With many specialties and residencies getting increasingly competitive, many medical students feel pressure to achieve perfect course grades, exam scores and clinical evaluations while also completing research. Studies have identified the following factors: "years of intensive academic study, the pressure to succeed, obtaining high grades and performing better than your fellow students" as key characteristics of medical school that also lend themselves to creating a competitive culture.[52] One study found that half of medical students believed that competition is a more defining characteristic of medicine than collaboration, and that this competitiveness is necessary to get ahead.[53] A student described the environment as:

> "You notice that students during the clinical years try to stand out, stabbing each other."[53]

Another student describes her interactions with other students on clinical rotations:

> "While talking to a patient, I've been interrupted by other medical students telling me they've already "bagsied" that patient. I've been on placements with students who will arrive at hospital two hours early just so they can reserve patients to go into theatre with. And fellow medical students have waved in my face their completed logbook with two weeks to spare before the placement ends…I can feel your judgment when I don't know something that the consultant asks. I am happy to learn but not to be judged, and your "humble bragging" about how long you spend in the library or how little work you do (but suspiciously know an awful lot) bothers me."[54]

This hypercompetitiveness has been found to be harmful to medical students by creating a more stressful learning environment.[52] It can also be additionally harmful to patients if students see the purpose of their clinic work as a performance and way to get an advantage over other students, instead of prioritizing the needs of the patient.

Productivity

Throughout students' long training to become a physician they must manage a significant amount of course work, studying, examinations, clinical work, research, volunteering and extracurriculars. In order to accomplish all of these tasks to the satisfaction of medical educators and administrators, medical students are expected to

prioritize their medical studies and work above all other aspects of their lives. The following statements are common examples of what students are told in regard to the work ethic required in medicine:

> "When I asked a physician...who gave a talk on bioethics how he balances family and work life, he told me that if I'm asking those sorts of questions I might want to rethink pursuing medicine in the first place. He told me it takes incredible dedication to learn all that you need to in order to become a competent doctor and that that sort of training requires sacrifice."[49]
>
> "the professional student would just do the work and not complain."[49]
>
> "You are no longer John or Mary. You are John-physician-in-training. It's part of your identity now."[49]

These examples highlight a few themes. One being the idea that medicine is not simply a job, but a calling and all-encompassing profession. Students are told that they need to give up all aspects of themselves and their personal lives in order to be a successful physician. There is no work-life balance because there is no life outside of work, you are a cog in the capitalist machine.

Toughness

These quotes also reveal "toughness" as another informally learned value. In order to succeed in medicine, students need "incredible dedication," "sacrifice" and a work ethic that requires them to "do the work and not complain."[49] This patriarchal value

in toughness also extends beyond medical training and into the workforce. One physician relates her degree of toughness to her self worth:

> "When I come off a service where I've been workin' really hard, I feel like the toughest person. I am so tough; I am so superior to you because I work longer hours than you; I have stayed awake more days in a row than you will ever stay awake, you know: I am so cool . . . that's exactly what it is."[55]

Not only is "toughness" expected and praised in the medical workforce, it also designates your status within the medical hierarchy. A study examining the prestige hierarchy in medicine found that the majority of physicians found surgical specialties to be the most prestigious, and one of the reasons given was being they are the "toughest":

> "Talk about delayed gratification, you know. They [surgeons] go through more years than just about anybody. It's very grueling. It is grueling. It is really grueling"[55]
>
> "It isn't just working hard- surgeons work an eighty-hour week and people are abusing them all the time and they can't complain or even talk about how hard it is because then someone thinks they are weak or have a bad attitude"[55]

This brings up another interesting point- that their admirable toughness relates not only to their extensive training and work hours, but also their working environment in which surgeons face more mistreatment than other specialties. But in order to maintain

this tough persona, they are expected to keep quiet, just like the medical student above was told to do.

Activity and Procedurality

Another reason given for why surgery is more respected was because they are more action oriented, procedural and hands on:

> "[surgeons] are in a position to physically save lives, and they're sort of frequently in that position. . . . Medicine people kinda hem and haw around. They think about it, they deliberate about it, they mess around with it, then they call the surgeon and the surgeon fixes it, you know?"[55]
>
> "[pediatricians] are the prime example of inactivity in medicine. I mean, they sit around all day with their little teddy bears and stuff like this on their stethoscopes. . . . And basically, I mean, you've probably heard that pediatricians are the children of medicine. I mean, if you think like a child, act like a child, behave like a child, you go into pediatrics because you feel comfortable with children. If you are an active, assertive, hands-on type of individual, that usually goes into surgery, you feel very uncomfortable around children because children are, the entropy is maximum and the surgeon hates entropy. The surgeon likes order and children are disordered. Surgeons are the big boys on the block, the parents who spank the children."[55]

Although action orientedness is not a bad quality, the fact that we elevate this characteristic in surgeons over the "inactivity" in pediatricians shows again how our patriarchal societal values (active over passive) are influencing our beliefs around what it means to be a successful physician.

Hierarchy

Additional patriarchal values of competition and hierarchy are also evident throughout the medical system despite how many times medical schools spout collaborative, inclusive and team-based learning environments. As was just mentioned, there is a well-known prestige hierarchy within the medical specialties that places more masculine, procedural, action oriented and tough (i.e. surgical) specialties as the top and more feminine, hands off, affective and dealing with women or children specialties (i.e. psychiatry, family medicine and pediatrics) at the bottom.[55] This study and many others have found these rankings to be fairly consistent amongst physicians, indicating that this hierarchy is well established.[55]

Outside of just medical specialties, there is also a clear hierarchy established at all training levels of medicine with physicians at top followed by residents and then medical students. Due to this hierarchy, medical students may feel powerless to advocate for themselves or even patients. Studies have found that the medical hierarchy leads to miscommunication and that this is responsible for more than 70% of medical errors.[56] These power dynamics are obviously damaging to patient care but also to the medical

trainee experience. Many students report concerns of speaking out against physicians due to fear of retaliation:

> "Don't bring it up because it' s going to hurt you in the end, it's better to stay quiet, not say anything, let it happen, take your grade at the end, be thankful that you passed. . . . Basically it's just lie down and take it."[57]
>
> "Your grade is on the line and you're not about to do anything about it. Plus, I was applying to _____ at the time and I wasn't going to open my mouth when I wanted to go to that place. It's just something you suck up."[57]
>
> "The belief is that nothing ever gets done if you complain. And the thing is once you complain to the medical school, what is NEOUCOM going to do for something that's happening at [one of the teaching hospitals]? Nothing. The doctors are still much more important than you are."[57]
>
> "My whole perspective is that it's dealt with seriously at first and then like everything else it gets dumped into a bureaucratic system and then gets lost and then nothing ever really changes."[57]

These are not unfounded concerns since students recall physicians telling them:

> "Oh, what are you going to do? Tell [the dean]? What're you going to do, tell [the ombudsman]?"[58]
>
> "Oh, it's ok if you tell [the dean], she knows I'm an asshole"[58]

Or an experience from one student who did report a physician for gender harassment and "was told by the clerkship director just to 'look for the good in people.'"[57]

Although disheartening to read, these are the realities that many students are experiencing in medical school. Despite much of medicine endorsing collaboration and being a team player, there is a steep hierarchy that makes it clear to medical students "who fits where, who does what, and who gets the most rewards."[5] Medical students must learn how to navigate these power dynamics since stepping out of line can result in serious long-term consequences for their careers. Part of this learning process often involves assimilation- medical students at the end of their training report higher preferences for hierarchy than when they started.[59]

Emotional Detachment

Medicine has a well-established history of objectifying patients- treating them like they are their diseases or organs and not like the complex thinking and feeling human beings that they are. This objectifying gaze in medicine relates back to its roots in science and its belief that the best way to understand and examine a specimen is as an observer from a distance. It also relates to the concept called a "masculine protest" in which medical providers believe that they need to distance themselves from patient suffering in order to protect themselves.[11]

Students begin medical school with many of the same ideals professed by the medical institutions they are joining, such as wanting to help people and make human connection. Studies have shown that these interests weaken as students undergo medical

training, and at the end of their training they develop decreased empathy, altruism and idealism and increased cynicism.[11,49] This phenomenon is known as "ethical erosion." This likely occurs because when students' personal values conflict with those of their superiors, they tend to weaken. As they weaken, the student becomes molded to the medical culture and may perpetuate the same things that were done to them. One student describes a common interaction on her medical team:

> "The only thing I ever heard from anyone was, "Such an interesting case, if you don't love this, you don't love medicine." I was like, this poor woman's going to die, why is everyone so excited? I felt that was just creepy."[60]

Not only does this have negative implications for patient care, but some convincingly argue that repressing emotions in patient care may be part of the reason why physicians have high rates of depression, substance use and burnout.[11]

Sexism

Over 80% of women medical students experience sex and/or gender harassment during their medical training.[61] Multiple studies of women medical students' experiences found examples of sexist jokes, sexual innuendos, flirtations and inappropriate touching of women students:

> "Dr. [Y] stared at every girl's chest. And nobody ever said anything about it. He wouldn't look you in the face, he would look at your chest when he was talking to you. . .. And he did it to every girl, every single female."[62]

> "It's pretty freakin cold in the OR and I would get goose bumps and [the male attending] would rub the back of my arms with his hand, and then he got the resident doing it too, it was just a little strange, I have to admit, and I was like 'Huh. . . . How do I deal with this?'"[62]
>
> "male patients that 'were very excited…one guy wanted me to change his underwear.'"[58]

Faculty/physicians were also noted to more commonly use men in demonstrations or patient cases, use "he" pronouns, speak to or make eye contact with men medical students, and condescend, ignore or take female medical students less seriously.[61] One student describes the preclinical learning atmosphere as:

> "From day 1, there'd be this bond between [the male students] and the male [teaching assistant]. And there'd be these jokes about sports and jokes about scoring and it had nothing to do with what we were doing in terms of science, but all of a sudden, all of the girls in the room would be on the periphery of that, and therefore all the learning that's happening, it's happening in the centre of the room, it's happening with the guys."[61]

Many women students found it difficult to fit in on the medical team, and would often form closer relationships to nursing staff while men medical students would relate better with the predominantly men physicians. This also had implications for the opportunities they were given.

> "I think the outcome of this is going to be that the relationships and bonds that I've formed in this year are going to be very much, ones of—where I feel like I'm supporting female interns and nurses, and that the males in my class are going to come out with a lot of powerful relationships with people who are going to write them recommendations for future powerful positions . . . it's kind of important . . . And it's really shown me, this past month, how easy it is to get ahead when you're a man. It's not that I didn't know that already, it's just made it more clear"[62]

Many women find ways of coping such as by altering their dress, behaviors or by downplaying their experiences:

> "Men always have sexual…comments and stuff…I'm getting more comfortable with it as in I just dismiss it or just talk back if I feel that it's more than I find acceptable."[58]

> "I would sort of keep my elbow between my hip and [the attending] so it wasn't easy to grab [my waist]."[58]

> "With women I'm much more prone to…making a lot of eye contact, holding their hand…giving them a hug after the visit sometimes if it's been very tough on them…whereas with men I tend to stand, be a lot more distant with them…it's been a response to some of these situations that have come up in the outpatient clinic, and me trying to deter any further situations. Um, kind of trying to put on a more androgynous front."[58]

Women are not immune from engaging in this sexist behavior. Many women medical students shared experiences of how some women physicians were dismissive towards them and told them to "just deal with it" when they disclosed incidences of gender harassment.[58] Many students found the women physicians to be cold, mean and unengaging and attributed this to the idea that women in medicine need to take on more masculine traits in order to survive the masculine culture of medicine.[58,62] The best example of this may be the field of OB/GYN. Despite the medical workforce and patient population being majority women, medical students report high levels of mistreatment on this clerkship rotation second only to their surgery rotation.[63]

However, women physicians are also in a tricky situation. Many report struggling with the double bind- on one hand they are expected to act feminine because they are women, but also criticized if they do not follow the masculine standards in medicine. One woman physician reflects:

> "I think I've changed probably for the worst these last twelve months because you work so hard and you get the shit beat out of you on a daily basis and they want you to be a man and act like a man and then when you do, it's like you have some big personality disorder . . . you are not feminine anymore."[55]

Additionally, some women medical students seemed to acknowledge their own sexism in judging women physicians as colder, and how this stems from their preconceived notions of how a woman should act.[58] One student shared being upset by a

woman resident who "wasn't caring and loving at the bedside" but not being bothered by her male counterpart doing the same thing.[58] She said:

> "It's interesting how the standards are so different and I don't think that that's necessarily fair. Especially in a field where women are expected to excel in all these areas that are categorized for quote unquote men only and we're supposed to transition ourselves into those expectations."[58]

Overall, these experiences illustrate the rampant sexism experienced by women medical students throughout their medical training. This sexism is a large component of the informal curriculum that teaches women students that they don't belong in medicine. And despite some women attempting to mold themselves into a more masculine image, the system still sees them as failing. Unfortunately, it may be a lose-lose situation until we begin to address the patriarchal underpinnings of medicine and change our current gender norms and value system.

Racism

Ethnic/racial minorities similarly face discrimination during medical school, with about 20% reporting ethnic/racial harassment.[64] This statistic, however, does not paint the full picture since many students often don't report instances of everyday racism and microaggressions. For example, about 50% of medical students report hearing offensive jokes with racialized ones being the most common such as:

> "This guy had gone through the windshield of his car and they made some comment about, 'Oh, he was DWC.' And I said, what's DWC? And they said, 'Driving While Chinese'."[64]

Ethnic minority medical students additionally experience microaggressions such as frequently being asked where they come from, and having their ethnic identities and cultures being mocked. One African-Canadian student shares an experience she had with a surgeon in the OR regarding her ethnicity:

> "And he [surgeon] was like, ''Sing the Banana Boat song.'' and then he started singing it, and – okay, that's not appropriate. And I'm thinking, ''I don't really know how to get you to shut up, because you're still singing!''... [Later] he said, ''If you send me on a free trip to the Caribbean, I'll let you do the next [procedure].''... [Then] he said, ''Oh, do some Island speak.'' I said, ''No, I don't think so.'' and he starts, [mimicking a Caribbean accent] ''Eh, mon.'' and I'm thinking, ''That's not right. I don't think you understand why I'm not laughing at you.'''[64]

There were also instances when ethnic minority students were made to feel invisible:

> "It is shameful to say there are people in my medical school class that I don't know their names. Mostly those are the people who are Chinese."[64]

> "There aren't many of us [Black males] here in the first place…they can't get our names right?! Damn."[65]

And instances when ethnic minority students were made to feel less qualified and/or less intelligent:

> "Don't worry...lots of Blacks—not people of color, but Blacks—struggle in this class. They just can't seem to grasp it."[65]

The prejudice that ethnic minority students face causes them to face a larger emotional burden and stress during medical training, and also negatively affects their sense of belonging. Studies have found that racial minority students often feel othered and socially isolated from the dominant (white) student group. Approximately 29% of ethnic minority students reported feeling like they don't belong in medical school compared to only 7% of their white peers.[64] This "othering" also made it difficult for them to access opportunities since the "[White faculty] were like the gate- keepers."[65]

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Hopefully the evidence provided on this section of the formal and informal components of the hidden curriculum made it clear how the patriarchal/white supremacist/capitalist underpinnings of medicine are still alive and well. Despite the many righteous proclamations of medical universities, these institutions are still embedded in and supporting these oppressive structures. In terms of medical training, this was evident in how the formal curriculum predominantly used white and male centered textbooks and lectures. It was also evident in the informal curriculum that upheld many patriarchal/white supremacist/capitalist values such as productivity, toughness, hierarchy, emotional detachment and procedurality and reinforced sexism and racism.

CHAPTER 5: CONCLUSION

I have highlighted many of the ways in which medical education perpetuates oppressive practices and beliefs. First, is the lack of women, TGNB and ethnic minority representation in academic medicine particularly in the higher ranks of leadership positions and prestigious specialties. This results in less minority faculty visibility for minority students, as well as a dearth of perspectives that is disadvantageous for the medical school learning environment. Second, is the research foundational to medical education that is deficient in female animal models, women participants, women researchers, and research topics that relate to women. Third, is the formal medical curriculum that is also deficient in material covering women's bodies, women's health and women's experiences. This lack of educational material on women is not only detrimental to students' knowledge base, but also their future women patients who are on the receiving end of this practiced knowledge. Fourth, is the hidden curriculum that informally teaches students that they need to be white, male, tough, competitive, emotionally detached and so on in order to be accepted and succeed in the medical profession. These values reflect our larger cultural system of patriarchy-white supremacy-capitalism.

Feminist theory is a method in which we can examine and work to correct these oppressive practices in medical education. For one, we can implement a gender analysis throughout the different components of medical education to make sure that women are fairly represented at the level of faculty, to research material, to content in

textbooks/lectures. We can also make medical curriculum more inclusive of different forms of knowledge and incorporate more humanistic perspectives in addition to the biomedicine currently taught. Most importantly, feminist theory can also help us challenge our current patriarchal/white supremacist/capitalist system in medicine. Hopefully this will create not only a more inclusive learning environment for medical students, but also train them on how to provide more empowering, holistic and patient centered care.

BIBLIOGRAPHY

1. 2018-2019 The State of Women in Academic Medicine: Exploring Pathways to Equity | AAMC. AAMC, https://www.aamc.org/data-reports/data/2018-2019-state-women -academic-medicine-exploring-pathways-equity. Accessed 13 Dec. 2021.
2. *Active Physicians by Sex and Specialty, 2019 New section*. (2020). AAMC. Retrieved January 10, 2022, from https://www.aamc.org/data-reports/workforce/interactive-data/active-physicians-sex-and-specialty-2019
3. Steinecke, A., & Terrell, C. (2010). Progress for whose future? The impact of the Flexner Report on medical education for racial and ethnic minority physicians in the United States. *Academic Medicine*, *85*(2), 236-245.
4. Barkin, S. L., Fuentes-Afflick, E., Brosco, J. P., & Tuchman, A. M. (2010). Unintended consequences of the Flexner report: women in pediatrics. *Pediatrics*, *126*(6), 1055-1057.
5. Wear, D. (1997). Privilege in the Medical Academy a Feminist Examines Gender, Race, and Power.
6. Chapman, E. N., Kaatz, A., & Carnes, M. (2013). Physicians and implicit bias: how doctors may unwittingly perpetuate health care disparities. *Journal of general internal medicine*, *28*(11), 1504-1510.

7. Salles, A., Awad, M., Goldin, L., Krus, K., Lee, J. V., Schwabe, M. T., & Lai, C. K. (2019). Estimating implicit and explicit gender bias among health care professionals and surgeons. *JAMA network open*, *2*(7), e196545-e196545.
8. Axelson, R. D., Solow, C. M., Ferguson, K. J., & Cohen, M. B. (2010). Assessing implicit gender bias in medical student performance evaluations. *Evaluation & the health professions*, *33*(3), 365-385.
9. Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the national academy of sciences*, *109*(41), 16474-16479.
10. Arruzza, C., Bhattacharya, T., & Fraser, N. (2019). Feminism for the 99 Percent. *A Manifesto. London, New York*.
11. Bleakley, A. (2014). Gender matters in medical education. In *Patient-Centred Medicine in Transition* (pp. 111-126). Springer, Cham.
12. Stalker, J. (1996). Women and adult education: Rethinking androcentric research. *Adult Education Quarterly*, *46*(2), 98-113.
13. Lee, S. K. (2018). Sex as an important biological variable in biomedical research. *BMB reports*, *51*(4), 167.
14. Zucker, I., & Beery, A. K. (2010). Males still dominate animal studies. *Nature*, *465*(7299), 690-690.

15. Wenger, N. K. (2012). Women and coronary heart disease: a century after Herrick: understudied, underdiagnosed, and undertreated. *Circulation*, *126*(5), 604-611.
16. Shepherd, J. (1995). Statin therapy in clinical practice: new developments. *Current opinion in lipidology*, *6*(5), 254-255.
17. Steering Committee of the Physicians' Health Study Research Group*. (1989). Final report on the aspirin component of the ongoing Physicians' Health Study. *New England Journal of Medicine*, *321*(3), 129-135.
18. Dougherty, A. H. (2011). Gender balance in cardiovascular research: importance to women's health. *Texas Heart Institute Journal*, *38*(2), 148.
19. Labots, G., Jones, A., de Visser, S. J., Rissmann, R., & Burggraaf, J. (2018). Gender differences in clinical registration trials: is there a real problem?. *British journal of clinical pharmacology*, *84*(4), 700-707.
20. Khan, M. S., Shahid, I., Siddiqi, T. J., Khan, S. U., Warraich, H. J., Greene, S. J., ... & Michos, E. D. (2020). Ten□year trends in enrollment of women and minorities in pivotal trials supporting recent US Food and Drug Administration approval of novel cardiometabolic drugs. *Journal of the American Heart Association*, *9*(11), e015594.
21. Tahhan, A. S., Vaduganathan, M., Greene, S. J., Alrohaibani, A., Raad, M., Gafeer, M., ... & Butler, J. (2020). Enrollment of older patients, women, and racial/ethnic minority groups in contemporary acute coronary syndrome clinical trials: a systematic review. *JAMA cardiology*, *5*(6), 714-722.

22. Jin, X., Chandramouli, C., Allocco, B., Gong, E., Lam, C. S., & Yan, L. L. (2020). Women's participation in cardiovascular clinical trials from 2010 to 2017. *Circulation*, *141*(7), 540-548.
23. Kaatz A, Lee YG, Potvien A, Magua W, Filut A, Bhattacharya A, Leatherberry R, Zhu X, Carnes M. Analysis of National Institutes of Health R01 Application Critiques, Impact, and Criteria Scores: Does the Sex of the Principal Investigator Make a Difference? Acad Med. 2016 Aug;91(8):1080-8. doi: 10.1097/ACM.0000000000001272. PMID: 27276003; PMCID: PMC4965296.
24. Mirin, A. A. (2021). Gender disparity in the funding of diseases by the US National Institutes of Health. Journal of Women's Health, 30(7), 956-963.
25. Christianson, M., Alex, L., Wiklund, A. F., Hammarström, A., & Lundman, B. (2012). Sex and gender traps and springboards: a focus group study among gender researchers in medicine and health sciences. *Health care for women international*, *33*(8), 739-755.
26. Fausto-Sterling, Anne, Myths of Gender, Basic Books, 1985, "Hormonal Hurricanes: Menstruation, Menopause, and Female Behavior," pp. 90-122.
27. Hammarström, A., & Annandale, E. (2012). A conceptual muddle: an empirical analysis of the use of 'sex'and 'gender'in 'gender-specific medicine'journals. *PLoS One*, *7*(4), e34193.
28. Risberg, G., Johansson, E. E., & Hamberg, K. (2011). 'Important… but of low status': male education leaders' views on gender in medicine. Medical education, 45(6), 613-624.

29. Verdonk, P., Benschop, Y., de Haes, H., Mans, L., & Lagro□Janssen, T. (2009). 'Should you turn this into a complete gender matter?'Gender mainstreaming in medical education. Gender and education, 21(6), 703-719.
30. Whitehead, C. (2013). Scientist or science□stuffed? Discourses of science in North American medical education. Medical education, 47(1), 26-32.
31. Duffy, T. P. (2011). The Flexner report—100 years later. The Yale journal of biology and medicine, 84(3), 269.
32. DasGupta, S., Fornari, A., Geer, K., Hahn, L., Kumar, V., Lee, H. J., ... & Gold, M. (2006). Medical education for social justice: Paulo Freire revisited. Journal of Medical Humanities, 27(4), 245-251.
33. Neely, K. L. P., Stifel, E. N., & Milberg, L. C. (2000). A systematic approach to faculty development in women's health: lessons from education, feminism, and conflict theory. Academic medicine, 75(11), 1095-1101.
34. Why Temple? Lewis Katz School of Medicine at Temple University. https://medicine.temple.edu/education/md-program/why-temple. Accessed 21 March 2022.
35. Jaye, C., Egan, T., & Parker, S. (2006). 'Do as I say, not as I do': Medical Education and Foucault's Normalizing Technologies of Self. Anthropology & Medicine, 13(2), 141-155.
36. Martin, Emily (1991). "The sperm and the egg: How Science Constructed a Romance Based on Stereotypical Male-Female Roles," pp. 485-501.

37. Campo-Engelstein, L., & Johnson, N. L. (2014). Revisiting "The fertilization fairytale:" an analysis of gendered language used to describe fertilization in science textbooks from middle school to medical school. Cultural Studies of Science Education, 9(1), 201-220.
38. Becker RF, Wilson JSW, Gehweiler JA. The Anatomical Basis of Medical Practice. Baltimore, Md: Williams & Wilkins; 1971.
39. Halperin, Edward C. MD, MA The Pornographic Anatomy Book? The Curious Tale of The Anatomical Basis of Medical Practice, Academic Medicine: February 2009 - Volume 84 - Issue 2 - p 278-283 doi: 10.1097/ACM.0b013e31819391e2
40. Parker, R., Larkin, T., & Cockburn, J. (2017). A visual analysis of gender bias in contemporary anatomy textbooks. Social Science & Medicine, 180, 106-113.
41. Netter, F. H. (2018). Atlas of Human Anatomy (Netter Basic Science).
42. Martin, G. C., Kirgis, J., Sid, E., & Sabin, J. A. (2016). Equitable imagery in the preclinical medical school curriculum: findings from one medical school. Academic Medicine, 91(7), 1002-1006.
43. Thande, N. K., Wang, M., Curlin, K., Dalvie, N., & Mazure, C. M. (2019). The Influence of Sex and Gender on Health: How Much Is Being Taught in Medical School Curricula?. Journal of Women's Health, 28(12), 1748-1754.
44. Verdonk, P., Mans, L. J., & Lagro□Janssen, T. L. (2006). How is gender integrated in the curricula of Dutch medical schools? A quick□scan on gender issues as an instrument for change. Gender and Education, 18(4), 399-412.

45. Dijkstra, A. F., Verdonk, P., & Lagro□Janssen, A. L. (2008). Gender bias in medical textbooks: examples from coronary heart disease, depression, alcohol abuse and pharmacology. Medical Education, 42(10), 1021-1028.
46. Verdonk, P., Benschop, Y. W., De Haes, H. C., & Lagro-Janssen, T. L. (2009). From gender bias to gender awareness in medical education. Advances in health sciences education, 14(1), 135-152.
47. Müller, A., & Crawford-Browne, S. (2013). Challenging medical knowledge at the source–attempting critical teaching in the health sciences. Agenda, 27(4), 25-34.
48. Phillips, S. P. (2002). Evaluating women's health and gender. American journal of obstetrics and gynecology, 187(3), S22-S24.
49. Vaidyanathan, B. (2015). Professional socialization in medicine. AMA journal of ethics, 17(2), 160-166.
50. 2021 FACTS: Applicants and Matriculants Data. (2022). AAMC. https://www.aamc.org/data-reports/students-residents/interactive-data/2021-facts-applicants-and-matriculants-data
51. Medical School Acceptance Rates, MCAT , GPA | Med Admissions Selectivity Index. (2022). Accepted. https://www.accepted.com/medical/med-selectivity-index
52. De Bruyn, S., Wouters, E., Ponnet, K., & Van Hal, G. (2019). Popping smart pills in medical school: Are competition and stress associated with the misuse of

prescription stimulants among students?. Substance use & misuse, 54(7), 1191-1202.

53. Lempp, H., & Seale, C. (2004). The hidden curriculum in undergraduate medical education: qualitative study of medical students' perceptions of teaching. Bmj, 329(7469), 770-773.
54. Sutton-Klein, J. M. (2015). I'm less competitive than you. BMJ, 351.
55. Hinze, S. W. (1999). GENDER AND THE BODY OF MEDICINE OR AT LEAST SOME BODY PARTS: (Re) Constructing the Prestige Hierarchy of Medical Specialties. Sociological Quarterly, 40(2), 217-239.
56. Singh, H., Thomas, E. J., Petersen, L. A., & Studdert, D. M. (2007). Medical errors involving trainees: a study of closed malpractice claims from 5 insurers. Archives of internal medicine, 167(19), 2030-2036.
57. Wear, D., & Aultman, J. (2005). Sexual harassment in academic medicine: persistence, non-reporting, and institutional response. Medical education online, 10(1), 4377.
58. Babaria, P., Abedin, S., Berg, D., & Nunez-Smith, M. (2012). "I'm too used to it": A longitudinal qualitative study of third year female medical students' experiences of gendered encounters in medical education. Social science & medicine, 74(7), 1013-1020.
59. Lepiece, B., Reynaert, C., van Meerbeeck, P., & Dory, V. (2016). Social dominance theory and medical specialty choice. Advances in Health Sciences Education, 21(1), 79-92.

60. Ratanawongsa, N., Teherani, A., & Hauer, K. E. (2005). Third-year medical students' experiences with dying patients during the internal medicine clerkship: a qualitative study of the informal curriculum. Academic Medicine, 80(7), 641-647.
61. Babaria, P., Bernheim, S., & Nunez□Smith, M. (2011). Gender and the pre□ clinical experiences of female medical students: a taxonomy. Medical education, 45(3), 249-260.
62. Babaria, P., Abedin, S., & Nunez-Smith, M. (2009). The effect of gender on the clinical clerkship experiences of female medical students: results from a qualitative study. Academic medicine, 84(7), 859-866.
63. Oser, T. K., Haidet, P., Lewis, P. R., Mauger, D. T., Gingrich, D. L., & Leong, S. L. (2014). Frequency and negative impact of medical student mistreatment based on specialty choice: a longitudinal study. Academic Medicine, 89(5), 755-761.
64. Beagan, B. L. (2003). 'Is this worth getting into a big fuss over?'Everyday racism in medical school. Medical education, 37(10), 852-860.
65. Strayhorn, T. L. (2020). Exploring the Role of Race in Black Males' Sense of Belonging in Medical School: A Qualitative Pilot Study. Medical Science Educator, 30(4), 1383-1387.