How do we treat our male and female patients? – A primer on gender-based health care inequities

Maria Loreto Figueroa a,*, Laurie A. Hiemstra b

a Clínica Alemana De Santiago, Universidad Del Desarrollo, Chile
b Banff Sport Medicine, University of Calgary, Canada

ARTICLE INFO

Keywords:
Health equity
Orthopaedics
Gender

ABSTRACT

Health is a fundamental human right, yet disparities in healthcare, based on gender, persist for women. These inequities stem from a patriarchal society that has regarded men as the default standard, leading to women being treated merely as smaller men. Contributing to these disparities are the gender stereotypes that pervade our society. Women possess differences in anatomy, physiology, psychology and social experience than men. To achieve health equity, it is vital to understand and be open to consider and evaluate these aspects in each individual patient. This requires an understanding of our own biases and a commitment to valuing diversity in both patient and caregiver. Improving equity and diversity throughout all aspects of the medical system will be necessary to provide optimal patient care for all.

INTRODUCTION

Alice is a 54-year-old woman with a 5-year history of worsening knee pain and arthritis. She has been to her family doctor multiple times, given anti-inflammatory medicine, and has been told her knee is not that bad. She disagrees. She does not work outside the home, but cares for her 3 grandchildren - 9 years, 7 years, and 4 years old - three afternoons and evenings a week while her daughter works. The kids are active and want her to play outside and do sports with them. Although Alice is a fit and athletic woman, she is finding it more and more difficult to keep up with her grandchildren. She tries her best, but she can barely walk on the days she doesn’t have the kids and spends most of them resting. Since she ‘doesn’t work’, she has been unsuccessful in getting a referral to an orthopaedic surgeon. Her husband is a plumber. He has also had increasing knee pain and was referred to an orthopaedic surgeon two years ago. Their x-rays look identical, but he had a total knee arthroplasty (TKA) 18 months ago. Alice finally gets in to see the orthopaedic surgeon and is told that she should wait longer for a knee replacement as she is not that old, not in enough pain, and since she doesn’t work, the operating room resources should be reserved for those who need them more.

There are systemic issues in medicine that lead to inequities in how male and female patients receive medical care. Sex and gender affect health status by influencing how individuals enter the medical system, are diagnosed, and receive treatment. This includes who receives treatment, and the timing and type of treatment offered [1]. The evidence supports the reality that, even taking into account the prevalence and severity of disease, men have greater access to medical and surgical interventions compared to women [2–5]. The underlying truths contributing to these gender-based healthcare inequities are many. Our society was founded on patriarchal ideals and men continue to hold the majority of the power, which contributes to the many underlying gender stereotypes that inform our decisions. Men are generally considered strong and decisive, while women are viewed as gentle and caring. These preconceived gender views can impact how physicians perceive and relate to their patients. This is magnified by the fact that the majority of physicians and surgeons are male. Additionally, the data from clinical and basic science research is based largely on male subjects. When these results are used to inform clinical practice to treat women, it can lead to misdiagnosis, misinterpretation of symptoms, and inappropriate treatment [6].

Even with the recent advances in gender equity globally, there remain significant disparities in how men and women are treated within the medical system. To understand gender-based healthcare inequities it is important to review some basic definitions. Health differences are variances in the incidence and prevalence of disease that are ‘unrelated to systematic, social, economic, or environmental disadvantage’. For example, women have a higher incidence of knee osteoarthritis (OA), while men are more likely to suffer trauma [7]. Health disparities or health inequities are differences in health metrics related to disadvantaged or marginalized groups. Men being more likely to be referred for and offered a knee

* Corresponding author. Orthopaedic Surgeon, Knee Surgeon, Av. Vitacura 5951, Vitacura, Santiago, 7650568, Chile. Phone: +56974818150.
E-mail address: mloretob@gmail.com (M.L. Figueroa).

https://doi.org/10.1016/j.jisako.2024.04.006
Received 14 November 2023; Received in revised form 4 April 2024; Accepted 8 April 2024
2059-7754/© 2024 The Authors. Published by Elsevier Inc. on behalf of International Society of Arthroscopy, Knee Surgery and Orthopedic Sports Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
replacement compared to women is an example of a healthcare inequity [7]. Metrics used to assess health inequities may include diagnosis, treatment, access to care, outcomes, and how a person experiences the medical system. Health Equity is “the state in which everyone has the opportunity to attain their full health potential, and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances.” [8]

Health is a universal human right. It applies “equally, to all people, everywhere, without distinction.” [9] The healthcare disparities that exist for disadvantaged or underrepresented groups, including sex, gender, gender identity, race, socioeconomic status, education, geographic location, and sexual orientation, are a matter of social justice. Delivering high-quality and equitable medical care is not achieved by treating every patient in the exact same way, but by treating everyone as unique with their inherent characteristics and social determinants of health. There are important differences in the anatomy, physiology, and psychology of women and men. We cannot avoid the sex or gender lens when treating our patients, as both are intimately tied to health outcomes.

HEALTHCARE INEQUITY IN MEDICINE

The patient’s journey through the medical system is comprised of several components, including access to medical care, disease surveillance, what investigations are ordered, and what medical or surgical treatment is offered. Layered onto these metrics are the patient’s experience and satisfaction with their care, which can influence all phases of the medical care journey. Gender-related psychosocial realities include socio-economic status, childcare and elder care-related duties, and trust in the healthcare system. Appropriate screening for disease, prompt and correct diagnosis of illness or injury, and the early initiation of treatment are paramount to achieving good health outcomes. There are many examples in the literature where gender plays a role in the delivery of healthcare to patients [10]. It is concerning that there are more than 700 diseases or conditions for which the age at first diagnosis is older for women than for men [10]. Examples include lower rates of HIV screening for women [11], and poorer assessment and treatment of women for alcohol use disorder [12]. There is poor adherence to guideline-recommended risk factor control and initiation of cardioprotective medication for women with type 2 diabetes and coronary artery disease compared to men [13,14]. When women are diagnosed later, their disease is more likely to have progressed further, and their clinical outcomes are subsequently worse.

Heart disease is an excellent example of a condition where women and men are diagnosed and treated very differently. “Yentl syndrome” is a term coined by Dr. Bernadine Healy, a prominent female cardiologist. It is used to describe how the symptoms of heart disease are different in women than men, leading to the under or misdiagnosis of ischemic heart disease in women [15]. This results in women with stable heart disease having more myocardial infarction, and women with acute coronary syndrome having higher mortality rates than men [16]. Even when the diagnosis is established, studies indicate that women are less likely than men to be assessed for cardiovascular disease risk (ODds ratio (OR) 0.88 (95% CI 0.81 to 0.96)) and to have their risk factors addressed (OR 0.75 (95% CI 0.60 to 0.93)) [17,18]. The use of diagnostic angiography is lower in women, as is the treatment of stable and acute heart disease with appropriate cardioprotective medications [19,20]. There are also gender differences in cardiac procedures, where women are less likely to be treated with percutaneous coronary interventions or coronary artery bypass grafts than their male counterparts [19,20].

These trends of under- or misdiagnosis and late presentation are seen in multiple specialties, including general surgery. Women are more likely than men to die from diverticulitis and have nonsurgical complications related to diverticulitis such as sepsis or chronic pelvic fistulating disease [21]. In organ transplantation, there are fewer women than men on the waiting list for kidney, liver, and heart transplants, even when accounting for disease prevalence [22–24]. Men are referred to a transplant centre more frequently than women and have more psychosocial support from their partners [25]. Male physicians seem to treat women suffering from chronic heart failure less comprehensively than men, leading to underutilization of cardiovascular drugs in female patients and women being placed on the transplant list later in the course of their disease [26]. In trauma care, women are less likely to be admitted to an intensive care unit (ICU) than men despite being more severely ill, particularly younger women under 45. Women receive lower prioritization than their male counterparts and are less likely to be transferred to a major trauma centre [27,28].

Healthcare inequity in orthopaedics

Orthopaedic and musculoskeletal conditions are not immune to the disparities in healthcare delivery seen between the sexes. Given the high prevalence of musculoskeletal conditions globally, in the United States (35.1–47%), in Asia (78.6–88%) and in Africa (44.1–94%), this disparity is of particular significance [29]. In the United States (US), musculoskeletal complaints account for an estimated 130 million patient-/caregiver encounters within the healthcare system annually [30]. Musculoskeletal conditions are more than twice as prevalent in women than men [30,31]. Women have a higher prevalence of inflammatory arthropathy, knee osteoarthritis, anterior knee pain, fragility fractures, anterior cruciate ligament (ACL) tears, patellofemoral instability, osteoporosis, and de Quervain’s tenosynovitis [32]. In some cases, like osteoporosis, this has led to better care for women than men [33]. However, for most orthopaedic conditions that are more prevalent in women than men, our understanding and treatment algorithms have lagged.

Female sex is a well-established risk factor for knee OA, with women over the age of 50 years having a higher prevalence of knee OA than their male counterparts [34]. In addition to a higher prevalence, women experience greater functional disability compared to men of the same age with similar grade knee OA [35]. Despite this, women are less likely to be referred to an orthopaedic surgeon by their family physician. Once referred, they are also less likely to be offered a knee replacement [36,37]. A series of studies demonstrated that physicians were 4.2 times more likely to recommend TKA to a man versus a woman when presented with a standardized patient, and the odds of an orthopaedic surgeon recommending total knee arthroplasty to a male patient was 22 times greater than for a female patient [36,37]. Similar findings were reported for patients with shoulder OA [38], hip OA [39], ankle OA [40], and degenerative spine disease [41].

Women’s athletic participation has increased substantially in the last few decades. To provide excellent care for female athletes, an understanding of the unique needs of women is necessary. There are well-known biological differences in anatomy, hormonal balance, aerobic capacity, and strength between men and women. Female athletes are at higher risk for ACL tears, patellofemoral pain and instability, stress fractures, concussion, and being the victim of sexual violence [42–46]. Currently, the care of athletes is not equitable, and disparities exist in the operative and non-operative treatment of male and female athletes. Women are 2–9 times more likely to sustain an anterior cruciate ligament (ACL) tear [46–50]. This is due to a complex interaction of multiple anatomical, biomechanical, neuromuscular, and social/environmental factors [48,51]. Despite higher rates of ACL injury in female athletes and the increasing participation of women in pivoting sport, men still undergo ACL reconstruction surgery at higher rates than women (adjusted OR = 1.4; 95% CI,.1–1.7) [52–54]. Patients with patellofemoral instability, who are 75% women [55], wait 5 times longer for surgery than patients with an ACL tear, even though patients with patellofemoral instability may have lower quality-of-life scores than those with ACL deficiency [55]. Men with tendinopathies are more likely to be treated aggressively with injections and surgery, while women are offered more conservative management [56].

Disparities extend to the experiences of men and women throughout their healthcare journey. Following COVID-19-related surgery delays and
physiotherapy closures, women were more likely than men to report increased physical symptoms, delayed recovery, and increased challenges in their ability to return to work [57]. Women reported more anxiety, stress, concern, frustration, and negativity than their male counterparts [57].

**WHY IS THERE DISPARITY?**

There are many possible explanations for the gender health equity gap. These include the preconceived gender stereotypes that are deeply rooted in our society, a body of clinical research that had been performed and based primarily on men, and a predominately male physician workforce. Women face a healthcare system that is based on the male patient and are often treated as smaller men. This can lead to failures in diagnosis when women present differently than the typical man. It can lead to issues with access to care when symptoms that women experience are judged differently than a man’s. It can lead to a lack of understanding and treatment of conditions that preferentially affect women. These delays in access to care and diagnosis result in women being treated later in their disease and thereby experiencing worse clinical outcomes. The potential causes of gender-related healthcare inequities are complex and can be separated into patient-related factors, provider-related factors, and systemic factors.

**Patient Factors**

There are patient factors, both physiological and psychosocial that can contribute to healthcare disparities. Men and women are inherently different, and therefore male physiology cannot be extrapolated directly to women. There is growing evidence for the important role of oestrogen in many disease processes including osteoarthritis [58]. Cartilage has been shown to contain oestrogen receptors, which may correlate to the increased incidence of knee osteoarthritis in post-menopausal women. Other hormones such as IGF-1 may also play a role in the development and progression of knee osteoarthritis. IGF-1 levels were found to be lower in healthy women than in healthy men, and markedly depressed in women who underwent total knee arthroplasty (TKA) even compared to healthy female controls. This difference was not seen between men undergoing TKA and healthy male controls [59]. Women also suffer from bone loss during pregnancy and lactation as a result of the hormonal changes that occur to fulfill the increased calcium requirements of foetal and neonatal development [60]. This can lead to osteoporosis and insufficiency fractures later in life [61].

Men and women also have different psychosocial realities that may combine with gender stereotypes to challenge the equitable treatment of patients. Pain assessment is one example of this. Pain is a subjective experience, and it is felt differently depending on the age, gender, and context of each patient. Significant research has been done on the differential response to pain in men compared to women [62-65]. Women feel pain differently than men which may lead physicians to mistrust or disregard complaints of pain. In addition, women often underestimate or ignore pain because of the social and societal demands of caregiving and balancing a career. Unfortunately, when they decide to seek medical care, gender stereotypes can cause them to be labelled as oversensitive. Understanding gender differences in symptoms such as pain is the first step to reducing inaccuracies in diagnosis and differential thresholds for treating women. Using standardized pain management protocols based on patients’ subjective pain ratings may reduce gender-related bias in acute pain management [66,67].

**Provider Factors**

Women now comprise more than 50% of medical students in several countries, including Canada, the US, the United Kingdom, Germany, and Sweden [68,69]. Despite the increase of women in medical school, the representation of women in the surgical specialties remains much lower [70]. Orthopaedic surgery has one of the lowest numbers of women and has been one of the slowest to make improvements to the gender gap. Only a handful of countries have over 15% of orthopaedic surgeons identifying as women [71,72].

The lack of female representation in the physician workforce contributes to gender-based healthcare inequities. Female healthcare practitioners are more likely to be aware of the issues that female patients may face. They are more likely to understand the demands of non-paid work and the struggles facing women with careers and disproportionately duties in the home. In addition, female patients are more likely to be comfortable with and relate better to a female surgeon. The effect of surgeon-patient sex concordance was explored in a series of studies out of Canada [73–75]. Female patients preferred a female surgeon, and short- and medium-term patient outcomes have been demonstrated better in patients of female surgeons [75,76]. Specific to orthopaedics, 16% of patients expressed a gender preference for their orthopaedic provider; interestingly, those who had a preference were largely female, and 90% preferred a female provider [77]. It’s been demonstrated that when patients identify with their physician based on sex or ethnicity they demonstrate greater adherence to treatments, improved communication and compliance, and overall better outcomes [78].

In recent years, the participation of women in competitive sport has dramatically increased. This is in part due to the passage and implementation of Title IX as a federal law in the United States that prohibits discrimination based on sex for education institutions that receive federal funding. This significantly influenced the growth of women in sports at all educational levels. Women now make up 43.7% of collegiate athletes across all division levels. Unfortunately, this positive trend toward gender equity in sports has not yet reached women in medicine, especially in fields that care for elite athletes. Women comprise only 12.7% of all team physicians at the collegiate (18.1%) and professional (6.7%) levels [79].

Improving the number of female physicians and surgeons would make significant inroads into the underlying causes of healthcare inequities in patient care. Women face many barriers to entering and advancing in orthopaedics. Using a validated measure for female leaders [80,81], the barriers to women in orthopaedics in Canada were studied. These included constrained communications, unequal standards, male culture, lack of mentoring, workplace harassment, and challenges with work-life integration [32]. These barriers are consistent with research that shows that women face discrimination at every stage of their career. Female medical students are discouraged from physical specialities such as orthopaedics, making increases in representation challenging. Women lag in academic advancement and attaining leadership positions [82–84].

Female doctors and surgeons are underrepresented as authors in major journals, members of journals’ editorial boards, conference speakers, and distinguished researchers [85–90]. Very few institutions have clearly outlined pregnancy or parenting leave guidelines [91–94]. Female doctors and surgeons are paid significantly less than their male colleagues, even when accounting for hours worked, education, and location [95–100]. Gender discrimination and sexual harassment are still experienced at high rates by both trainees and practicing female surgeons [82,101–108].

**Systemic Factors**

Systemic factors undermine all of the patient and provider factors mentioned above. Gender stereotypes fuel assumptions and perceptions about patients, their level of disability, and their need for intervention. Stereotypes can create a hostile environment for female healthcare providers and lead to gender gaps in representation, leadership, mentoring, and compensation. These factors also influence the basic science and clinical research that informs the decisions of physicians and surgeons. This research has been largely based on trials using predominately male subjects. The results are directly translated to women without consideration of the differing anatomy, physiology, and psychology of women. This leads to significant bias in the diagnosis, treatment, and outcomes.
Social determinants of health (SDOH) are the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness, which are in turn shaped by a wider set of forces: people are born, grow up, live, work and age, and the systems put in place providers must understand and address these social determinants in healthcare, and express their level of disability to physicians. Healthcare

Suggested solutions

The “World Economic Forum” (WEF) states in its Global Gender Gap Report 2022 that the overall global gender gap will close in 132 years, on average [112]. Clearly, this is too long, and a directed and intentioned effort needs to be made to hasten this. Solutions to the gender gap need to begin with re-framing medicine and medical care. Providing equitable healthcare will involve understanding individual patient needs, male and female, throughout the human lifespan including the influence of the social determinants of health. We must recognize the unconscious bias and privilege that each person brings into the patient/caregiver relationship and work to mitigate these. Further study needs to be done on the influence of unconscious bias on provider recommendations regarding treatment and include strategies for providers and patients to mitigate against such bias [113]. Decision support tools should be developed for providers and patients to guide the decision-making process regarding surgical intervention, so equitable, evidence-based, and gender-based care can be provided. This begins with the knowledge that diversity is an asset, that there are multiple ways to look at a problem, and that not everyone experiences things in the same way.

Social determinants of health (SDOH) are the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness, which are in turn shaped by a wider set of forces: economics, social policies, and politics [114]. These factors play a significant role in health outcomes and the accessibility, availability, and experiences of healthcare [115]. SDOH affect men and women differently and will influence the ability of women to access healthcare, afford healthcare, and express their level of disability to physicians. Healthcare providers must understand and address these social determinants in order to provide equitable healthcare [116–120]. The rationale for SDOH screening is simple: If you don't ask, you won't know. And if you do not know about a patient's social needs, you cannot address them and provide the best care. Optimal patient care should address health in the context of each patient's social situation using a gender lens, as it will affect women and men differently.

Medical diagnosis and treatment should be informed by equitable clinical research. Research needs to consider gender-based differences when designing, implementing, and analysing trials. Consideration of sex and additional health equity parameters for patients and providers in randomized controlled trials is needed to improve the quality of evidence [121]. Clinical and basic science trials should equally include male and female subjects [10]. Given the known influence of sex on outcomes, the reporting of sex in orthopaedic research and gender-based analysis should be mandatory. Gender-specific studies to better understand injury and pathophysiology are needed to close the gap in outcomes between male and female patients [122]. In addition, the safety of drugs and treatments during reproductive phases should be included in all studies [123]. Outcome measures must be critically examined to ensure they are not gender biased. We need outcome measurement tools to reflect functional results better and ensure these tools are gender-neutral, so that they can be valid and reliable for women and men.

The systemic barriers to the full inclusion of female healthcare providers must be understood and removed, so that the value that women bring to diversify the medical system is recognized. The ‘old boys club’ male culture needs to be reformatted to one of inclusion of all people. Women must be elevated to the leadership positions that they deserve. There are more than enough qualified women for leadership positions. The ‘meritocracy’ that informs promotion must be evaluated with a gendered lens. Leadership qualities that unfairly favour men need to be re-evaluated. Mentorship and pipeline programs must be available to encourage more women to enter the profession. There must be zero tolerance for gender-based bullying, sexual discrimination, and sexual assault. Appropriate and safe reporting mechanisms must be in place for those who need them.

Remuneration between male and female surgeons must be equalized. This can begin by removing bias from referral systems, ensuring fair and equitable patient care. Hospitals, clinics, and surgeons should be compensated and assigned operating room time based on health equity metrics such as access, patient outcomes, and social determinants of health. This rewards good outcomes, satisfied patients, not just the volume of surgeries that are done [124,125]. Orthopaedic subspecialties should be compensated equitably. This will eliminate the hidden curriculum pushing women to the lesser paid specialities. Having women at the table where decisions, such as fee schedules are made, would be a first step to achieving this. Finally, Orthopaedic surgery cannot be performed without clinical efforts to treat patients, research to inform decisions, education of the next generation, and leadership to guide the way. All of these components of our profession are necessary and should be valued equally both conceptually and economically [126,127].

Conclusion

Health is a fundamental human right, yet disparities in healthcare, based on gender, persist for women. These inequities stem from a patriarchal society that has regarded men as the default standard, leading to women being treated merely as smaller men. Contributing to these disparities are the gender stereotypes that pervade our society. Women possess differences in anatomy, physiology, psychology, and social experience than men. To achieve health equity, it is vital to understand and be open to consider and evaluate these aspects in each individual patient. This requires an understanding of our own biases and a commitment to valuing diversity in both patient and caregiver. Improving equity and diversity throughout all aspects of the medical system will be necessary to provide optimal patient care for all.

Declaration of competing interest

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


