Role of Health Equity Research and Policy for Diverse Populations Requiring Hand Surgery Care

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KEYWORDS

• Equity • Justice • Research • Surgery • Health equity • Public policy • Socioecological approach • Hand surgery

KEY POINTS

- Health equity is defined as eliminating systematic disparities in health imposed on marginalized groups resulting in negative health outcomes by allocating resources based on need. Equality refers to equal resources provided to all, regardless of need. True health equity cannot be achieved unless meaningful effort is applied to improve pervasive inequality.
- A socioecological approach can be used to evaluate the problems and propose solutions to health equity in Hand Surgery, specifically at the individual, community, institutional, and public policy levels.
- At the individual level, we must improve medical trust within diverse populations as well as providing patient education and strategies for risk reduction.
- At the community level, we must collaborate with community leaders to better help underserved populations. We also must invest in rural surgeons to ensure equitable geographic access to Hand surgeons and therapists.
- At the intuitional level, we must increase diversity and antiracist education of our workforce to better represent the populations we service. Institutions must increase collaborate to provide multidisciplinary, longitudinal care for vulnerable patients.
- At the public policy level, governmental agencies must thoughtfully collect data on all populations to assess areas of gaps and for progress. Through improve reimbursement and incentives from the Centers for Medicare and Medicare Services, patients with historically poor insurance can receive equitable Hand Surgery care.

INTRODUCTION

Public policy and health services research have meaningful impact on population health but can often have unintended consequences if the diversity of the population is ignored. Instead, policy and research should be viewed from the lens of health equity.[1] Although often used synonymously, equality and equity encompass two very different concepts. Health equity is an ethical principle driven by social justice which means that everyone has a fair and just opportunity to be as healthy as possible.[2] Equality refers to equal resources provided to all. True health equity aims to eliminate the systematic disparities in health imposed on marginalized groups that adversely impact outcomes.[3] (Fig. 1) Although there is a

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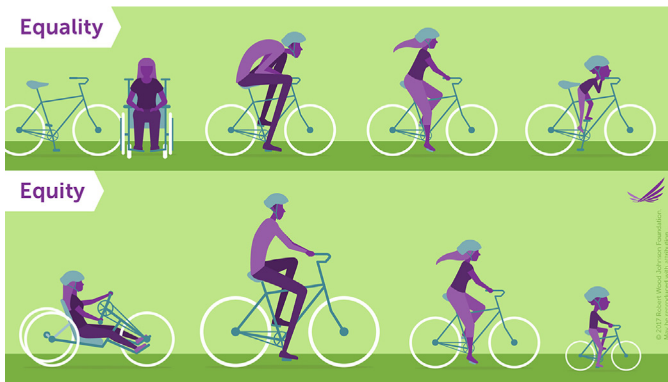

Fig. 1. Equality versus equity. To make meaningful change, we must not expect everyone to ride the same bicycle, but to ensure different bicycles for each person's needs. (*Courtesy of* the Robert Wood Johnson Foundation, 2017; with permission.)

well-recognized need to eliminate health care disparities, marginalized populations such as racial/ethnic minority groups, rural residents, and socioeconomically disadvantaged families continue to receive poor access and quality of health care. Despite advancements in medicine and technology, the persistent and ignored impacts of the social determinants of health undermine population health and wellness.

In a recent systematic review, research on the social determinants of health in Hand Surgery was sparse.[4] Race,[5] socioeconomic status,[4] and rural location[6] are all associated with poorer outcomes in surgery. Research in health equity and policy is essential for understanding the root cause, by guiding where to improve outcomes with an emphasis on implementing effective remedial strategies.[7] Chung and colleagues[8] outlined the intercalated relationship of research and health policy (**Fig. 2**). Research is necessary to describe a problem, policy is implemented to remedy the problem, and assessment is undertaken to elucidate the policy's impact and to refine the solutions. This cycle is repeated to offer the best outcomes for patients. In 1986, a national agenda for the Secretary's Task Force Report on Black and Minority Health was instituted to examine and improve health disparities. Despite this effort, there is still much effort to be made outside of the operating room.[7]

As surgeons, we are poised in a unique position to influence injustice. Conducting health equity research and with policy inclination strive to advocate for vulnerable groups. Factors such as social, environmental, and economic factors are pertinent to identify the barriers and propose solutions to achieve health equity. Despite thousands of published studies, our current knowledge is limited with regard to the most effective strategies to reduce health inequities,[9] though it is known that pursuing equity requires a collaborative approach engaging diverse stakeholders.[2] A socioecological model[10] conceptualizes the role of health equity research and policy for diverse populations in Hand Surgery. This approach considers the complex interactions among the individual, community, social, and political environments as it relates to health. It is useful for both understanding the nature of health problems as well as insight into the most effective methods for successful improvements by incorporating environmental change (not simply modifying individual behaviors).[1,11,12] We will be discussing Hand Surgery care for diverse populations through this modified socioecological approach that includes multiple levels: individual, community, institutional, and public policy (**Fig. 3**).[10]

INDIVIDUAL

At the individual level, there are biological and personal history[12] circumstances that contribute to

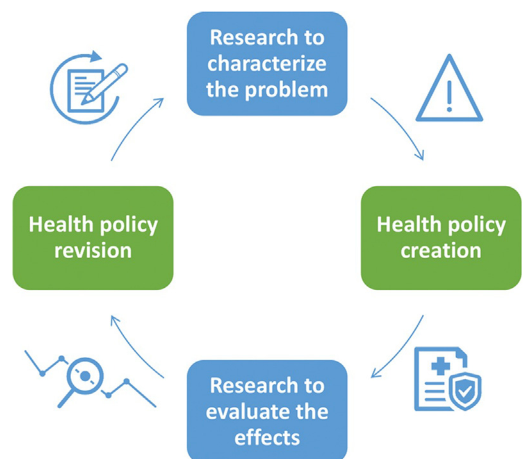

Fig. 2. Research is needed to characterize the problem, inform the development of evidence-based policy, evaluate the policy's effects, and guide policy revision. (*From* Chung and colleagues Promoting Health Policy Research in Plastic Surgery. Plast Reconstr Surg. 2021; 147 (5): 1242–1244; with permission.)

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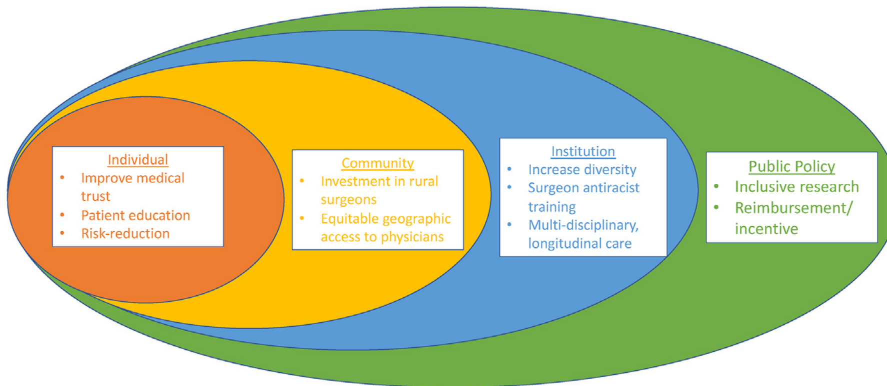

Fig. 3. A modified socioecological approach to health equity and research of diverse populations in Hand Surgery.

disparities in Hand Surgery care. One pathway that has led to this disparity is deeply rooted medical mistrust.[13,14] From Henrietta Lacks' cells to the Tuskegee Syphilis Study, there are many examples of how modern medicine has marginalized the Black community leading to reluctance to trust health care recommendations and seek care when needed. From 1932 to 1972, the United States government conducted a research study by forcefully denying incarcerated Black men proven treatment of syphilis to study the progression of the disease. The Tuskegee Syphilis Study is frequently cited as the most influential event precipitating Black Americans lack of medical trust, although it is not an isolated incident.[15] In 1951, at Johns Hopkins University, doctors obtained samples of cells from their Black patient, Henrietta Lacks, during treatment of cervical cancer without her knowledge or consent. These cells were discovered to have unique capabilities and were shared within the scientific community widely, still without consent. They have advanced the field of biology without any consent or compensation to her family. Ms. Lacks unfortunately passed away shortly after her diagnosis, never realizing her contribution. These are just a few examples of the systemic racism inherent in our health care system that has led to medical mistrust by minority communities.

To begin to systematically dismantle this barrier, Hand surgeons and policy makers can collaborate with community leaders to promote understanding of Hand Surgery care. This method has been proven successful in the past. In 2010, the Centers for Disease Control and Prevention launched the Racial and Ethnic Approaches to Community Health (REACH) initiative. This effort gathered coalitions of community health advisors, nurses, health care providers, and clergy to administer information regarding primary prevention strategies in African American communities. Through multidisciplinary collaboration, the REACH initiative successfully reduced disparities across the country. One example is increased screening for diabetes to improve awareness, prevention and control of the disease. In South Carolina, the hemoglobin A1C screening disparity between the African Americans and White populations decreased from 21% to 0%, and in Alabama, the disparity in breast and cervical cancer screenings decreased from 15% to 2%. This is important evidence that a community approach can be successful in reducing health disparities.[16] Even within our surgical practices, simply having an educated discussion can impact outcomes. In 2010, New York State passed the Breast Cancer Provider Discussion Law which greatly improved breast reconstruction rates, with the risk-adjusted rate growing significantly higher for African Americans and elderly patients.[17]

Hand and upper extremity trauma is the most common type of injury in emergency departments, responsibly for more than 12% of all trauma cases in the United States.[18] Currently, treatment of hand trauma is inequitably distributed. For instance, patients with hand amputation injuries who are African Americans, Hispanics, uninsured, or underinsured patient are less likely to undergo attempted replantation.[19] Patient comorbidities secondary to low socioeconomic status have more self-destructive behaviors such as greater tobacco use and unhealthy lifestyles can impact surgical outcomes.[20] Policy changes can be implemented to improve the safety of our vulnerable populations. For example, seatbelt[21] and helmet laws[22] have contributed to less morbidity and mortality from motor vehicle accidents, similar regulations can help minimize the burden of traumatic hand injuries. Gunshot injuries are a source of increasing injury with devastating effects.[23] Strict firearm laws can reduce upper extremity trauma for high-risk populations, clearly also improving the safety of the entire community. Fireworks are

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also an increasing source of debilitating hand trauma[24] that can also be curtailed through legislation on consumer purchasing. The Occupational Safety and Health Administration has implemented several policies to ensure to workplace safety for hand injuries,[25] although the burden of injury from occupational injury remains high, highlighting the need for even more work in this arena.[26]

COMMUNITY

At the community level, several geographic and socioeconomic challenges exist. The Emergency Medical Treatment and Active Labor Act (EMTALA) was created in 1986 to prevent discriminatory access to emergency medical care by requiring all institutions to accept emergency patients regardless of insurance status.[27] Despite this legislation, inequities persist.

For basic Hand Surgery problems, many community-based Hand surgeons do not accept Medicaid given poor reimbursements, which burdens patients to travel to a tertiary care center or safety-net hospital.[28–30] Complex upper extremity problems also often require transportation to subspecialists within Hand Surgery and/or a tertiary care center.[28] The disparity arises when patients with Medicaid insurance lack resources to travel and thus do not receive the necessary care they need or succumb to high out-of-pocket expenses.[31] Bias also exists in Emergency Medical Services transport, as Hanchate and colleagues[32] found that Black and Hispanic patients are more likely to be transported to a safety-net hospital emergency department (ED) compared with White patients within the same zip code. Long and colleagues[6] reviewed escalation of care for digital amputation and found that lower socioeconomic neighborhoods were associated with fewer transfers to a higher level of care, precluding these patients from replantation opportunities.

Rural populations also face limited access to health care. There are higher costs for travel to hand specialists with possibly more time away from work, adding greater stressors to the patient. The undesirable effect is the patient seeks care through nonspecialized physicians/surgeons or even ignores pursuing care.[31,33] Kalmar and Drolet found that geographic factors contributed to limited access to congenital Hand Surgery.[34] Rios-Diaz discovered that across the United States, there is a statistically significant paucity of Hand surgeons in rural and socioeconomically disadvantaged areas.[35] Establishing subspecialists in rural communities through policy changes may have great impact on health care equity while also providing economic growth for the rural community.[33] This research highlights the need for incentives to promote Hand surgeons to serve in rural America.

A recent systemic review outlined policy implementations to increase the health care force in rural areas.[36] An important finding emerged: retention of physicians was optimized by supporting rural residents training to the medical professions through local education, tuition waiver, and flexible schedules to promote employment and family needs. Simply paying higher incentives was associated with increased recruitment of physicians to rural areas, but low rates of retention.[36] Interestingly, the expansion of Medicaid and Medicare to rural areas disincentivized physicians, likely given the poorer reimbursements of these systems and the large proportion of the population covered by this insurance.[37]

Developing community–academic partnerships is a strategy that can be used to overcome these barriers. The organizations responsible for training Hand surgeons, namely the American Board of Plastic Surgery and the American Board of Orthopedic Surgery, can implement policy changes to better train Hand surgeons. There can be greater opportunities for training programs in rural locations as well as new fellowship models for rural surgeons to specialize into Hand surgeons during their practice. Through this model, the recruitment and retention of rural Hand surgeons can be maximized to better serve this marginalized population. In addition, larger institutions can invest in providing resources to these underserved communities to ensure they receive the care needed.

INSTITUTIONAL

Poor outcomes experienced by minorities are pervasive in the medical literature yet even surgeons do not recognize the problem—only 37% believe disparities exist, and even 5% in their own practice![38] All medical professionals—not just Hand surgeons—must learn cultural competence[39] and antiracist education[40] to serve patients, staff, students, and colleagues. The current literature is sparse and inconclusive on the most effective way to recognize and reduce implicit bias.[41] This will be an important area for increasing research efforts, though there are some strategies institutions can use.

The patient–physician relationship can be strengthened by greater diversity in Hand Surgery as patients feel connected by racial and ethnic concordance and improved care for underserved populations.[42,43] Increasing the diversity of Hand surgeons is necessary to improve health equity

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must begin in training. The most recent *JAMA* Graduate Medical Education Data[44] highlight this urgency for diversity in Hand Surgery. Of the listed training positions, 20% reported Asian, 8% Hispanic, less than 1% Native Hawaiian/Pacific Islander, and 0% Black ethnicities. Residency programs can be aware of the role of implicit bias in letter of recommendations and how this biased language may prevent an equitable selection process while also providing tools for avoidance of this language.[45] Our professional societies can establish formal pipeline programs at both the resident and medical student levels. They can sponsor scholarships for health equity research, establish diversity-focused visiting professorships, and formal health equity conferences to contribute to this cause. In addition, faculty members within Hand Surgery can support underrepresented minority students through mentorship and sponsorship to inspire them for Hand Surgery while also helping to improve their application to be competitive for the appropriate surgical residency.[46] A more holistic approach to medical student acceptance has also been shown to increase diversity in medical education.[47] Within higher education, focus can be given to deliberately teaching the history of the social determinants of health and structural racism to foster change in current practitioners as well as future generations.[5]

There is need for institutional improvement for preoperative and postoperative care of vulnerable patients. Occupational therapy is essential to achieving optimal outcomes in Hand Surgery, yet several barriers exist to access this important component of comprehensive hand care.[46,48] Zubovic and colleagues[49] discovered that after emergency department visits, uninsured and Medicaid-insured patients are significantly less likely to initiate hand specialty follow-up and to complete follow-up when already established with an outpatient clinic. This finding is multifactorial, though it can be attributed a lack of insurance with increased cost-sharing, poor health insurance literacy, geographic limitations, and lack of care coordination.[48] Another important study by Calfee and colleagues[28] found that patients with Medicaid insurance (26%) were significantly more likely to miss postoperative appointments than patients with private insurance (11%), with no-show rates increasing with the greater distance required to reach the specialist.

To ensure necessary follow-up, we can implement policy measures in all patient care settings, from the outpatient clinic to the operating room, and the emergency department. Automatic scheduling of follow-up appointments with telephone reminders, provision of transportation vouchers and waivers of fees at the time of the appointment are practices that have been shown to increase compliance rate to up to 80%.[50,51] In addition, strengthening interdisciplinary teams to include community primary care physicians, case managers and social workers can establish longitudinal episodes of care with less opportunity for patient attrition.[31] Patients will benefit from positive outcomes, including compliance with postoperative restrictions, management of comorbidities, and follow-up with hand therapy.[52] Prioritizing an approach of health equity can ensure that populations with the greatest unmet needs are effectively reached through institutional change.

PUBLIC POLICY

At the public health policy level, inequity manifests through several barriers of care for marginalized populations. Public policy interventions have the greatest impact against these barriers when they target socioeconomic variables, arguably the most impactful through federal legislation. The Affordable Care Act (ACA) of 2010 has led to the most significant changes for improving population health in the modern era, expanding access to health care to millions of previously uninsured Americans.[1]. It also established the Offices of Minority Health (agencies within the Department of Health and Human Services [HHS]) to allocate new resources to strengthen workforce diversity and to require nonprofit hospitals to collaborate with the community to conduct community health needs assessment This highligts the importance of a multifaceted and grassroots approach to health equity.

From a research and evaluation perspective, the ACA mandated that any HHS sponsored assessment include racial, ethnic, and socioeconomic demographics, the benefit of which provides more granular data, to better identify specific population health needs.[1] The literature has a lack of diversity of our research populations, and these data must be included to reflect our diverse communities.[53,54] One solution to ensure equitable research is to grow and link population-based administrative health records.[55] This data linkage, through advances in technology combined with racial and socioeconomic demographic data, can provide novel information for evidence-based health services research. Marginalized individuals often lack diligent primary care and may be more nomadic in their health care receipt, so by linking these records we can better track individual outcomes.

Despite the ACAs expansive coverage, many surgeons chose not to treat patients with Medicaid given poor reimbursement and burdensome

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paperwork requirements from Centers for Medicare and Medicaid and workman's compensation.[28–30,56,57] Targeted legislative changes should be implemented to increase the access of care to disadvantaged population through improved reimbursement. Further research is needed to characterize novel reimbursement strategies for Hand surgeons to include quality improvement efforts and by providing rewards and penalties as incentives to improve health care quality for the disadvantaged. In addition, more accurate indicators of surgical quality are necessary as metrics of success in Hand Surgery to emphasize more in the realm of form and function rather than mortality.

Reimbursement reforms may have unintended consequences, such as disenfranchising targeted populations or unfairly penalizing safety-net providers.[20] Billig and colleagues[58] outline a "pay-for-participation" strategy to avoid providing rewards to only high-performing, well-financed systems to mitigate the risk for further inequity. In this model, participants learn from one another and institute changes to improve patient care through quality. Such innovative methods focused on value are necessary as the US transitions from a fee-for-service to a value-based payment system. Reimbursements are increasingly tied to value, rather than volume. To evaluate the impact of policy changes on Hand Surgery outcomes, efforts should be devoted to assess value-based care through the lens of the social disparities of health.[8]

SUMMARY

Health equity ensures everyone has a fair and just opportunity to be as healthy as possible, despite unequal resources.[2] For diverse populations in Hand Surgery, a modified socioecological approach is useful for conceptualizing the role of health equity and research at the individual, community, institutional, and health care system levels. Collaboration among the community, policymakers, stakeholders, and health care professionals is necessary to achieve health equity. We must thoughtfully and willfully change the current practice to include these complex and multifactorial interactions within race, society, and the health care system. The quality of health care in the United States cannot improve until health equity is reached.

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