

Health Care Inequalities in Congenital Cardiology: An Interventional Cardiologist Perspective

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Introduction

Different patterns emerge along lines of socially defined categories of people when resources in a society are distributed unevenly, typically through allocation standards. Who has access to social goods in society is influenced by power, religion, kinship, prestige, race, ethnicity, gender, age, sexual orientation, and class. Social inequality typically refers to a disparity in outcomes, but it can also refer to a disparity in access to opportunities. Unfortunately, these social inequalities and/or disparities do not just affect health care. The Society for Cardiovascular Angiography and Interventions (SCAI) recently made these health care disparities in interventional cardiology a major focus for 2020-2021. In a recent publication, distinct factors causing disparities between interventional cardiology subspecialties were identified. A task force was established by the SCAI congenital heart disease (CHD) council to investigate the particular difficulties and disparities affecting paediatric cardiology and CHD practice [1].

Although multiple factors have been suggested to play a role in these continued and troubling findings, several studies attempting to identify factors (such as prematurity) have not demonstrated an association with neonatal mortality. However, these altered expression patterns not only suggest a potential genetic component but also raise questions regarding environmental factors. Perhaps the most troubling finding is that while the mortality rate continues to trend downward, we continue to see disparate mortality rates in non-Hispanic Blacks. The CHD council of SCAI has conducted this systematic review to investigate potential modifiable factors in the CHD population as potential targets for improvement. In light of these disparities, the overall rate of disparate mortality for patients with CHD persists into adulthood [1].

Description

There has been a momentous development in the range of innate cardiovascular imperfections that can be concealed or fixed utilizing transcatheter or careful mediations. While some of these conditions can be treated on an individual basis, others necessitate immediate or emergency treatment. Based on established guidelines, it appears to be simple to provide vulnerable children and adults with CHD with lifesaving congenital interventional procedures by trained congenital interventional cardiologist. However, achieving this goal can be challenging due to a lack of appropriate congenital diagnostic services, well-equipped catheterization laboratories, appropriate support from an experienced congenital cardiac surgeon, and the infrastructure for appropriate pre- and post-procedural care. It's possible that neither state-of-the-art adult cardiac catheterization laboratories nor many independent community hospitals offer any of these options. As a result, many of these treatments can only be safely carried out in close proximity to specialized children's hospitals that have the necessary resources [2].

There are more than 1 million adult cardiac catheterizations performed annually in the United States, but there are only about 125 pediatric cardiology

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Received: 02 February, 2023, Manuscript No. jccdd-23-91933; **Editor assigned:** 03 February, 2023, PreQC No. P-91933; **Reviewed:** 16 February, 2023, QC No. Q-91933; **Revised:** 21 February, 2023, Manuscript No. R-91933; **Published:** 27 February, 2023, DOI: 10.37421/2329-9517.2023.11.540

programs nationwide. Undoubtedly, some of these programs likely have limited interventional capabilities and may not be able to provide the most up-to-date trans catheter treatment options for various congenital cardiac lesions. Additionally, many of these programs for children are located in densely populated urban areas. Truth be told, 8 US states miss the mark on pediatric cardiology program and 14 states have just a solitary program. Patients may be required to travel hundreds of miles to a program that can offer cutting-edge congenital interventional services as well as appropriate follow-up evaluations and/or treatment as a result, particularly in larger, predominantly rural states. This can be a significant boundary to the consideration and results for these patients since distance from a cardiovascular consideration place has been demonstrated to be related with more terrible endurance for pediatric patients with a wide range of CHD. Comparable geographic difficulties have been displayed to exist for comparative patient gatherings that require interesting consideration with profoundly particular assets [3].

Adult patients with CHD, for instance, present an analogous challenge because of the particular aspects of their care that prevent them from receiving comprehensive and up-to-date care in large geographic areas. In fact, Gurvitz et al. demonstrated that rural patients are more likely to experience significant care lapses. Nearly half of adult patients with CHD live in areas that are at least one hour away from a specialized center for adults with CHD, and 5.4% live more than four hours away, potentially necessitating an unnecessary overnight hospital stay, according to a recent study assessing geographic access to care for adults with CHD in the United States. This disparity could have a significant clinical impact because certain interventional procedures are required to prevent fatal or devastating outcomes. For instance, infants born with D-transposition of the great arteries or hypoplastic left heart syndrome (also known as hypoplastic left heart syndrome with restrictive atrial septum) with single ventricle anatomy and obstructed pulmonary venous return may not survive without treatment within the first few hours of life [4].

In addition, postoperative patients with shunt-dependent pulmonary blood flow may present acutely with shunt obstruction, requiring prompt evaluation and/or treatment. Patients with severe valve stenoses or conduit obstruction may require immediate treatment, but they may not have easy access to routine follow-up due to their location, delaying evaluation and treatment in the catheterization laboratory. When compared to adults with coronary artery disease, the pediatric patient with CHD has less access to health care, particularly in rural areas. There are data indicating that access to specialized pediatric cardiac centers is associated with improved survival. Similar improvements in mortality were also found for adults with CHD when surgery was performed at a specialized center for adults with CHD. Decreased mortality has also been shown in pediatric leukemia treated at specialized cancer centers [5].

Given the potential aberrations depicted above with the clinical ramifications that may altogether influence patient wellbeing and result, further assessment is important to decide if expanded separation from interventional pediatric cardiovascular administrations brings about dissimilar procedural results and additionally deficient procedural development. It should also be mentioned that debates continue regarding the dilution of experience at each individual cardiac center and the centralization of tertiary care. To address this concern regarding distance from the center, there are currently models of outreach clinics managed by a large center that require additional investigation. The survival rates of premature and low-birth-weight infants have significantly improved as a result of advancements in perinatal medicine. This has brought about an expanded number of low-birth-weight babies with CHD including patent ductus arteriosus, which may likewise prompt pneumonic hypertension. As a result, the catheterization laboratory is seeing an increase in the number of premature and low-birth-weight infants who may require diagnostic and interventional procedures. However, these patients pose significant challenges and are more

likely to experience complications during invasive procedures due to their size, fragility, and comorbidities [4].

Pregnancy is a multifaceted problem that affects non-Hispanic Blacks in a disproportionate way. Racial disparities are consistently seen in premature births in the United States, with non-Hispanic Black women found to have a 2- to 2.5-fold increased risk compared with non-Hispanic White women. This finding is multifactorial, and it has been suggested that even increased stress plays a significant role in prematurity disparity. Given these facts, we, as an interventional community, must be aware of the disparate risks that Black patients have for interventional procedures [5].

Conclusion

We have discovered a number of factors that, when it comes to children and adults with CHD who require diagnostic and interventional catheterization, may result in disparities in care and poor outcomes. We can begin to implement changes that may improve all of our patients' access to high-quality care by raising awareness of these ideas. We hope to continue gaining a better understanding of how these factors directly affect our CHD patients who require care in the cardiac catheterization laboratory by utilizing existing data and registries like IMPACT.

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How to cite this article: Stapleton, Gary. "Health Care Inequalities in Congenital Cardiology: An Interventional Cardiologist Perspective." *J Cardiovasc Dis Diagn* 11 (2023): 540.