Health Care Disparities in Congenital Cardiology: An Interventional Cardiologist's Perspective

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Received: July 10, 2024, Manuscript No. IJCRIMPH-24-110039; **Editor assigned:** July 12, 2024, PreQC No. IJCRIMPH-24-110039 (PQ); **Reviewed:** July 20, 2024, QC No. IJCRIMPH-24-110039; **Revised:** July 23, 2024, Manuscript No. IJCRIMPH-24-110039 (R); **Published:** July 30, 2024, DOI: 10.35248/IJCRIMPH.24.16(1).001-002

Abstract

Distinct patterns develop along the lines of socially defined groups of persons when resources in a society are distributed unevenly, typically through allocation rules. In determining who gets access to social goods in society, factors such as power, religion, kinship, status, race, ethnicity, gender, age, sexual orientation, and class all play a part. Social inequality typically relates to a lack of result equality, but it can also refer to a lack of opportunity access equity. Unfortunately, these societal inequities and/or disparities are not unaffected by health care. The Society for Cardiovascular Angiography and Interventions (SCAI) recently highlighted these health care disparities in interventional cardiology as a key area of concern for 2020–2021.

Keywords: Preventive cardiology • Atherosclerosis • Primordial prevention • Primary prevention • Secondary prevention • Risk assessment • Cardiovascular disease

Introduction

According to Grines et al.'s recent SCAI article, there have been noticeable discrepancies in the mortality of non-White patients with CHD for the past ten years.1 There is growing proof that these variations continue even after adjusting for age, gender, genetic syndrome, and surgical risk type (Society of Thoracic Surgeons (STS) category). The prevalence of severe heart disease is still unequally distributed, with non-Hispanic Blacks and Asians bearing the brunt of it.8,9 Due to the fact that the distribution of severe cases is unevenly distributed based on live births, considerations regarding access to prenatal diagnostics and, consequently, potential variations in termination rates, must be taken into account. It is unknown if patients with earlier access have greater termination rates.

Description

Right-sided lesions have also shown trends, with Whites showing a higher proportion of less severe kinds. These changed expression patterns raise concerns about environmental influences in addition to suggesting a potential genetic component. The unequal death rates we continue to observe among non-Hispanic Blacks are perhaps the most concerning finding, despite the mortality continuing to move downward. Although a number of reasons have been proposed as contributing to these persistent and alarming findings, preterm has not been linked to infant mortality in various studies that have attempted to uncover these causes. The overall differential death rate of a CHD patient continues into adulthood.

The variety of congenital heart abnormalities that can be managed or corrected with transcatheter or surgical procedures has made significant strides. While some of these illnesses can be managed electively, others need for quick action. Based on established standards, it appears to be a straightforward undertaking for qualified congenital interventional cardiologists to provide lifesaving congenital interventional treatments to vulnerable children and adults with CHD. The lack of widespread access to appropriate congenital diagnostic services, congenital interventional cardiologists with a well-equipped catheterization laboratory and appropriate support from a skilled congenital cardiac surgeon, as well as the infrastructure for appropriate preprocedural and postprocedural care, make it difficult to achieve this goal.

Although there are many cardiac catheterization labs for adults around the country, and more than 1 million adult catheterizations are conducted each year, there are only about 125 pediatric cardiology programs in the whole of the United States. These programs may not be able to provide the most cutting-edge transcatheter therapy choices for a variety of congenital cardiac abnormalities due to their likely restricted interventional skills in some cases. A lot of these pediatric programs are also located in densely populated urban regions. In actuality, there are no pediatric cardiology programs in 8 US states, and there are only single programs in 14 states. As a result, patients may have to travel hundreds of miles to a program (particularly in the bigger, more rural states). The inadequate information about adult patients with CHD is discussed in all of the aforementioned articles, as well as the difficulties specific to this frail patient population with its own set of disparities. A pre-catheterization risk assessment method was suggested by the catheterization risk in adult patients score in 2019. However, there are currently few external validation studies for the aforementioned models/scoring systems, and it is unclear whether they are clinically effective. The wide range of patients with pediatric and adult CHD foreshadows the challenge of classifying diagnoses and patient traits to derive succinct scoring systems. With a focus on the categorization of CHD diagnoses and the underlying hazards that they bring into the catheterization laboratory, more study is required.

The most frequent congenital deformity is Congenital Heart Disease (CHD), which continues to be the leading cause of newborn mortality despite improvements in mortality rates from congenital heart problems over time. Significant racial differences in CHD mortality trends may be seen in the United States, where Black patients consistently have higher mortality rates than White patients over time. The term "critical CHD" in neonates refers to heart abnormalities that require treatment during the first 30 days of life, and improvements in prenatal ultrasonography diagnosis of such newborns have been made over time. Although the majority of CHD cases occur in low-risk pregnancies, there are recognized maternal and fetal risk factors that can be used as indicators to refer to fetal echocardiogram.

Fetal echocardiography enables accurate CHD diagnosis, thorough prenatal counselling, perinatal management planning, and the identification of fetuses who are at risk of hemodynamic instability after delivery, necessitating a specialized delivery plan and delivery at a tertiary surgical centre. Fetuses with CHD/hypoplastic left heart syndrome can be risk stratified using fetal echocardiography protocols, and multidisciplinary teams made up of pediatric cardiologists, obstetricians,

surgeons, and neonatologists are frequently needed to manage these babies. Prenatal diagnosis has been shown to improve outcomes and mortality in specific populations with critical CHD, such as hypoplastic left heart syndrome and transposition of the great arteries, despite conflicting data on the effect of prenatal diagnosis of all types of CHD on overall mortality.

Although fetal echocardiography technology and methods have considerably advanced over time, there are still differences in the prenatal diagnosis of CHD. Prenatal CHD diagnosis rates have historically been low, ranging from 28% to 61% in different studies, however trends show improvement over time. Several studies have looked into the relationship between socioeconomic factors and prenatal diagnosis, consistently finding that patients with lower socioeconomic status are less likely to have a prenatal diagnosis of CHD. One study from the STS database in 2015 reported a wide variation in the prenatal diagnosis of CHD across regions and states. Although there were no racial disparities, a study from Boston Children's Hospital showed that lower socioeconomic level and public insurance were independently associated with a decreased risk of receiving a prenatal diagnosis of CHD. According to a different study from Children's Hospital of Wisconsin, having a prenatal diagnosis is independently correlated with living in poverty or a rural area. One of the objectives of the fetal heart society, which was founded in 2014, was to encourage and promote multicenter research and build a research collaborative. The socioeconomic and regional influences on the prenatal diagnosis of critical heart disease are being studied in ongoing initiatives.

Although the rate of CHD prenatal diagnoses is rising over time, it is evident that patients in underdeveloped and/or rural areas have a lower likelihood of receiving a prenatal diagnosis. Further research on racial and socioeconomic disparities is required to develop solutions that would allow an improved rate of prenatal diagnosis in the most vulnerable patient populations. There is strong evidence that fetal diagnosis and prenatal risk stratification of infants born with critical CHD are associated with improved outcomes. The institute of medicine published a report in 2002 that stated that having insurance reduced all-cause mortality and that "the uninsured have poorer health and shortened lives". Research specifically focusing on children and examining the impact of insurance on health has shown results that are comparable.

Studies have shown a clear link between insurance status and results, despite the paucity of research on how insurance status influences outcomes in CHD patients. Insurance status is frequently closely related to race, ethnicity, and socioeconomic level as a social predictor of health. To ascertain the effects of racial/ethnic and socioeconomic characteristics on the outcome of CHD, Peyvandi et al. conducted a population-based cohort research utilizing the California Office of Statewide Health Planning and Development database. For Hispanic and non-Hispanic White ethnicities, a composite outcome of death and readmissions in the first year of birth was examined. With an odds ratio of 1.7, Hispanic ethnicity was generally linked to bad outcomes.

Conclusion

For pediatric and adult CHD patients who require diagnostic and interventional catheterization, we have found a number of characteristics that may contribute to discrepancies in care and poor outcomes. By raising awareness of these ideas, we can start making changes that might improve all of our patients' access to high-quality treatment. In the future, we intend to make use of the data now available and registries like IMPACT to further our understanding of how these factors affect our CHD patients who need treatment in the cardiac catheterization lab.

Cite this article: Khing K. "Health Care Disparities in Congenital Cardiology: An Interventional Cardiologist's Perspective". *Int J Coll Res Int Med Pub Heal,* 2024, 16(1), 001-002.