

Review Article

Paediatric Heart Health: A Multifaceted Approach to Prevention and Intervention

Boutitie F¹, Pasrija G¹, Goldhaber G¹, Pelletier T¹, Pruszczyk H¹

Department of Health Sciences, Dakar Bourguiba University, Senegal

***Corresponding Author:** Pasrija G, Paediatric Heart Health: A Multifaceted Approach to Prevention and Intervention

Citation: Pasrija G. (2025). Paediatric Heart Health: A Multifaceted Approach to Prevention and Intervention 1(2)

Copyright: © 2025 Pasrija G, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: August 04, 2025 | **Accepted:** August 11, 2025 | **Published:** August 16, 2025

Abstract

Paediatric heart health is a critical facet of overall child well-being, with cardiovascular diseases increasingly recognized as significant contributors to morbidity and mortality in the paediatric population. This paper addresses the multifaceted aspects of paediatric heart health, emphasizing a comprehensive approach to prevention and intervention strategies.

Keywords:

paediatric heart health, cardiovascular diseases, prevention, intervention, lifestyle, early detection, paediatric cardiology.

Introduction

Pediatric heart health stands as a cornerstone of overall child well-being, playing a pivotal role in shaping the trajectories of individual lives. In recent years, the landscape of pediatric cardiology has evolved, shedding light on the substantial impact of cardiovascular diseases on the health and longevity of the pediatric population. Recognizing that a healthy heart is fundamental to a thriving childhood, this paper endeavors to elucidate a multifaceted approach to pediatric heart health—one that encompasses both prevention and intervention strategies.

The impetus for this exploration arises from the increasing prevalence of cardiovascular diseases among children, necessitating a paradigm shift towards proactive and comprehensive care. Beyond the traditional focus on congenital heart anomalies, there is a growing awareness of acquired cardiovascular conditions influenced by a myriad of factors, including lifestyle, genetics, and environmental determinants.

Paediatric Heart Health: A Comprehensive Landscape

At the core of this multifaceted approach lies the recognition of the interplay between genetic

predispositions and modifiable risk factors. Early childhood serves as a critical window to instill heart-healthy habits, emphasizing the significance of nutrition, physical activity, and the prevention of obesity—a precursor to many cardiovascular risk factors.

Prevention as the Keystone

Preventive measures take center stage in our exploration, as fostering heart-healthy lifestyles lays the foundation for sustained cardiovascular well-being. Education and advocacy become essential tools in empowering families and communities to prioritize and implement preventative strategies. By addressing risk factors at their roots, we aim to create a resilient defence against the onset of paediatric cardiovascular diseases.

Advancements in Early Detection

Simultaneously, we delve into the realm of early detection, leveraging advancements in diagnostic technologies and genetic screening. Timely identification of risk factors such as hypertension and genetic predispositions allows for targeted interventions, guiding healthcare providers in tailoring strategies to the individual needs of each child.

Innovation in Paediatric Cardiology Interventions

As we embrace a comprehensive vision, this paper explores the cutting-edge interventions in pediatric cardiology, emphasizing the role of personalized medicine and novel therapeutic approaches. We navigate the evolving landscape of pediatric cardiac imaging, genetic insights, and innovative interventions to address congenital and acquired heart conditions.

In synthesizing these multifaceted elements, we aim to provide a holistic understanding of pediatric heart

Journal of Clinical Cardiology and Cardiovascular Diagnosis

health, advocating for a collaborative effort among healthcare providers, educators, families, and policymakers. Through this approach, we aspire not only to mitigate the impact of cardiovascular diseases on the pediatric population but also to lay the groundwork for a healthier and more resilient generation.

Innovative interventions in pediatric heart health encompass a range of cutting-edge approaches aimed at addressing congenital and acquired cardiac conditions in children. These interventions leverage advancements in medical technology, surgical techniques, and personalized medicine to enhance outcomes and improve the quality of life for young patients. Here, we explore several innovative interventions in pediatric cardiology:

Minimally Invasive Cardiac Procedures: Advances in interventional cardiology have led to the development of minimally invasive techniques for treating certain pediatric cardiac conditions. Procedures such as percutaneous valve replacements and atrial septal defect (ASD) closures are performed through small incisions or catheter-based approaches, reducing the need for traditional open-heart surgery.

Fetal Cardiac Interventions: In select cases of congenital heart defects diagnosed during pregnancy, fetal cardiac interventions may be considered. These interventions involve procedures performed in utero to correct or alleviate certain cardiac abnormalities, potentially improving outcomes for the newborn.

3D Printing for Surgical Planning: The use of 3D printing technology has revolutionized surgical planning in pediatric cardiology. Patient-specific heart models can be created from imaging data, allowing surgeons to visualize complex cardiac anatomy and plan intricate procedures with greater precision.

Gene Therapy for Congenital Heart Diseases: Advancements in genetic research have paved the way for innovative gene therapy approaches in treating certain congenital heart diseases. Targeted interventions aim to correct genetic mutations or modulate gene expression, potentially providing therapeutic options for previously untreatable conditions.

Ventricular Assist Devices (VADs) in Pediatric Patients: The use of ventricular assist devices has expanded to include pediatric patients with severe heart failure awaiting heart transplantation. Miniaturized devices designed for pediatric use can provide temporary mechanical support to the heart, allowing time for transplantation or recovery.

Hybrid Procedures for Complex Cases: Hybrid procedures combine surgical and interventional

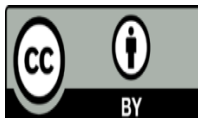
cardiology techniques to address complex congenital heart diseases. These collaborative approaches may involve a combination of catheter-based interventions and traditional surgery, providing tailored solutions for challenging cases.

Remote Monitoring and Telemedicine: Innovations in telemedicine and remote monitoring technologies enable continuous surveillance of pediatric patients with cardiac conditions. Wearable devices and remote monitoring systems allow healthcare providers to track patients' cardiac health in real-time, facilitating early detection of potential issues.

Stem Cell Therapies: Exploration of stem cell therapies holds promise for regenerative interventions in pediatric cardiology. Research is ongoing to harness the regenerative potential of stem cells to repair damaged cardiac tissue and improve heart function in congenital and acquired heart diseases.

References

1. Ferguson E.C., Krishnamurthy R., Oldham S.A.A. Classic Imaging Signs of Congenital Cardiovascular Abnormalities. *Radiographics*. 2007;27:1323–1334. doi: 10.1148/rg.275065148.
2. Malik P., Pathania M., Rathaur V.K. Overview of Artificial Intelligence in Medicine. *J. Fam. Med. Prim. Care*. 2019;8:2328–2331. doi: 10.4103/jfmpc.jfmpc_440_19.
3. Peng DM, Rosenthal DN, Zafar F, et al. Collaboration and new data in ACTION: a learning health care system to improve pediatric heart failure and ventricular assist device outcomes. *TranslPediatr* 2019;8:349–55. 10.21037/tp.2019.07.12
4. Vamos M, Erath JW, Hohnloser SH. Digoxin-associated mortality: a systematic review and meta-analysis of the literature. *Eur Heart J* 2015;36:1831–8. 10.1093/eurheartj/ehv143

Journal of Clinical Cardiology and Cardiovascular Diagnosis

This work is licensed under Creative Commons Attribution 4.0 License
DOI:10/JCCCD/2025/006

Your next submission with**Olites Publishers will reach you the below assets**

- We follow principles of publication led by the Committee on Publication Ethics (COPE).
- Double blinded peer review process which is just as well as constructive.
- Permanent archiving of your article on our website
- Quality Editorial service
- Manuscript accessibility in different formats (PDF, Full Text)
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

Learn more: <https://olitespublishing.com/journal-of-clinical-cardiology-and-cardiovascular-diagnosis/>