

19th European Congress on Clinical Pediatrics and Child Care

September 27, 2024 | Webinar

Volume : 09

Nutritional Challenges in Pediatric Congenital Heart Disease: Identifying Key Biomarkers for Improved Surgical Outcomes

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Congenital heart disease (CHD) is one of the most common congenital pathologies, affecting approximately 9.5 per 1000 live births globally. While advances in medical science and surgical techniques have significantly improved both survival rates and life expectancy for patients with CHD, they have also underscored the need for effective post-operative management to enhance long-term outcomes. Malnutrition, often underrecognized in this population, plays a critical role in both pre-operative and post-operative care.

A thorough review of the scientific literature was conducted to identify reliable markers of malnutrition in pediatric CHD patients, aiming to reduce intra-operative and post-operative complications. Malnutrition is closely linked to poor surgical outcomes in these children. Key nutritional markers identified include weight-for-age Z-score (WAZ), triceps-skinfold Z-score (TSFZ), serum albumin, pre-albumin, brain natriuretic peptide (BNP), growth differentiation factor 15 (GDF-15), and tumor necrosis factor-alpha (TNF- α).

Children with CHD are particularly susceptible to malnutrition, both pre- and post-operatively, which can lead to increased complications and delayed recovery. While clinical markers such as WAZ and TSFZ are commonly used, they are influenced by factors like fluid restriction and diuretics, frequently used post-operatively in CHD patients. Biological markers like serum prealbumin have yielded conflicting results, raising concerns about their consistency.

Thus, there is a pressing need for the development of reliable growth and nutritional biomarkers tailored to children with CHD. These biomarkers would enable early identification of at-risk populations and prompt nutritional interventions, ultimately improving surgical outcomes and reducing complications.

Key words: pediatric malnutrition, congenital heart disease (CHD), nutritional biomarkers, surgical outcomes.

Biography

Petra-Caroline Mayaya is currently a third-year pediatrics resident, combining clinical practice with advanced research. In addition to residency training, she is pursuing a PhD focused on the study of risk factors associated with congenital heart disease (CHD). Their research aims to uncover key insights that could improve early diagnosis and management strategies for this common congenital condition, contributing to better long-term outcomes for pediatric patients.

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Abstract received : September 9, 2024 | Abstract accepted : September 11, 2024 | Abstract published : 02-10-2024