

Emerging insights into nutrition in pediatric metabolic disease: A comprehensive review of the Second Pediatric Nutrition Conference organized by the College of Health Sciences, Qatar University, Doha, Qatar

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Pediatric metabolic diseases encompass disorders that disrupt normal metabolic processes manifested by abnormalities in various chemical reactions and often induced by inherited genetic defects (Mahé et al., 2023). These chemical reactions are responsible for regulating the metabolic pathways involved in converting food into energy, and essential compounds, and the disturbance in these pathways can lead to various health issues (Clemente-Suárez et al., 2023). The prevalence of pediatric metabolic diseases, for instance, metabolic syndrome (MetS), has been on the rise among children and adolescents (Sharif et al., 2024). These diseases are highly complex; therefore, early diagnosis and management are key to preventing metabolic diseases later in life (Codazzi et al., 2024). This also calls for creating greater awareness, research, and development of innovative solutions for mitigating these disorders.

The Second Pediatric Nutrition Conference, themed “Emerging Insights into Nutrition in Pediatric Metabolic Disease,” was held on February 21–22, 2024, and offered a rich and diverse exploration of critical topics in pediatric health and nutrition in the Middle Eastern and North African (MENA) region and worldwide. The conference provided attendees with comprehensive knowledge and understanding of multifaceted challenges and emerging opportunities in pediatric care and focused on addressing the most pressing issues in pediatric nutrition today. Key discussions included integrating growth monitoring into primary healthcare systems to address the dual burden of malnutrition. This dual burden, encompassing both undernutrition and obesity, underscores the urgent need for national policies that promote holistic, evidence-based approaches to childhood obesity. Among the highlights were studies on dietary habits and their impact on the nutritional status of children, emphasizing early nutritional practices and the pivotal role of gut microbiome in metabolic health.

Research presented at the conference also delved into the effects of household food insecurity on childhood nutrition. It explored innovative approaches, such as metabolic surgery for pediatric obesity and various feeding practices affecting infant growth outcomes. Additional presentations tackled the prevalence of inherited metabolic disorders and

critical issues such as picky eating in early childhood, childhood malnutrition in conflict-affected regions, and parental awareness associated with food allergies. Novel concepts such as Diet Cost Optimization for Environmental Sustainability (DICOES) and oral olive oil for premature neonates were also discussed, offering promising strategies for addressing complex pediatric health concerns.

Furthermore, poster presentations addressed topics vital to pediatric health and nutrition, including promoting physical activity in children as well as interventions to combat childhood obesity. Discussions also addressed hidden hunger in the Eastern Mediterranean Region, the use of ketogenic diet therapy for drug-resistant epilepsy, and the relationship between food choices and mental health in adolescents. Significant research findings included the effects of vitamin D supplementation on gestational diabetes, DNA methylation patterns associated with gestational diabetes, and the impact of nutrition education on childhood obesity prevention. The presence of harmful chemicals in human milk, food literacy among Saudi adolescents, and malnutrition prevalence in Lebanon were also thoroughly examined. The effects of COVID-19 lockdowns on children’s body mass index, dietary interventions for Crohn’s disease, and the influence of maternal nutrition on infant gut microbiota were highlighted, alongside the efficacy of marine chitosan oligosaccharide (COS) as a medical food for hypercholesterolemia in children. Other studies focused on dietary patterns affecting glycemic control in Type 1 diabetes, personalized dietary plans for managing autism and diabetes, and the effectiveness of various dietary interventions for gestational diabetes mellitus. Research also scrutinized the prevalence of childhood obesity (and contributing factors) in the United Arab Emirates and Libya, as well as picky eating behaviors among Kuwaiti pre-schoolers and their association with feeding practices and weight status.

The research presented at the conference collectively underscored the intricate interplay between diet, microbiota, lifestyle, and health outcomes in pediatric populations, reinforcing the need for tailored interventions to achieve optimal child well-being. The Second Pediatric

Nutrition Conference showcased ground-breaking research and innovative approaches to pediatric nutrition and metabolic health. By bringing together experts from diverse domains, the conference emphasized the critical role of comprehensive, multidisciplinary strategies in promoting the health and well-being of children worldwide. These insights guide future approaches in pediatric healthcare, highlighting the importance of multidisciplinary strategies.

Pediatric metabolic diseases are often characterized by wide-ranging clinical manifestations, marked by symptomatic variations and biochemical profiles, requiring early diagnosis, which has proven to be a significant challenge (Teixeira et al., 2023). This places a greater onus on researchers and investigators to address the complexities associated with these disorders by integrating advancements into existing screening and diagnostic procedures/frameworks, care strategies, and treatment protocols. Such endeavors are crucial for improving the treatment outcomes and quality of life for children affected by pediatric metabolic diseases and their families. Therefore, scientific congregations such as the Second Pediatric Nutrition Conference are vital for exchanging contemporary insights, formulating strategies, and ideating the way forward in this regard.

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