

Diabetes & its Complications

Addressing the Persistence of Obesity: Exploring Factors and Early Detection of Metabolic Syndrome in Children

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Introduction

This article aims to address the challenges in reducing the prevalence of obesity and raises important questions for further research and analysis. It acknowledges the support of doctors, collaborators, and the educational unit Liceo Panamericano de Guayaquil from the IN.PE.TU program.

Questions Raised

1. Does Metabolic Syndrome exist in childhood?
2. What are the parameters that clinically raise suspicion of it in children, and from what age?
3. How can we quantify its prevalence?
4. Why haven't we conducted this research in a larger population for validation?
5. Can IBM Watson and Modeler Flow AI revolutionize pediatric cardiovascular risk assessment, paving the way for preventive strategies and healthier futures?

Proposed Strategy

Through cross-sectional studies, the authors have developed an innovative, reproducible, and cost-effective proposal to study the risk factors leading to metabolic syndrome in children from an early age, such as during puberty. This proposal requires simple tools like a measuring tape, a blood pressure monitor with a pediatric cuff, and a pencil. It can be easily applied by paramedical personnel or educators in any geographical area.

Recommended Screening Approach

The authors suggest screening children over 12 years old at the population level using three indicators: sedentary behavior for more than 3 hours in front of screens, waist-to-height ratio (WHtR) above a specific cutoff point (e.g., 0.46, but each area may have its own cutoff), and brachial blood pressure measurement above the

90th percentile in 3 consecutive readings. These indicators, when combined with Artificial Intelligence, hold potential for sensitive detection of Metabolic Syndrome with laboratory parameters.

Prevalence Findings

In a study involving school children aged 12 to 15 years, a prevalence of 33.9% of metabolic syndrome was observed using the following pathological cut-off points: WHtR > 0.46, weight > 56.1 kg, pure sedentary lifestyle > 3 hours in front of screens/video games, and systolic blood pressure (SBP) within the 90th percentile (>123 mmHg). These indicators yielded a high probability (97% to 100%) of early diagnosis of metabolic syndrome.

Revolutionizing pediatric cardiovascular risk assessment

The successful integration of AI technology played a significant role in advancing the field of pediatric cardiovascular risk assessment. IBM Watson and Modeler Flow AI, powered by machine learning algorithms, provided healthcare professionals with the ability to process extensive clinical data, including genetic predispositions, lifestyle choices, and emerging biomarkers. This transformative approach allowed for the identification and analysis of complex patterns related to cardiovascular risk factors in children. By harnessing the power of AI, personalized interventions can be tailored for each child, marking a remarkable step forward in our ability to combat metabolic syndrome and reduce the burden of cardiovascular disease" [1-4].

Conclusion

The proposed screening approach utilizing WHtR, sedentary behavior, and elevated SBP presents a feasible, innovative, and cost-effective method for determining the prevalence of metabolic syndrome in childhood. External validation is required to confirm its efficacy. If validated, this approach could have a significant

impact on tackling obesity and promoting a healthier society. By harnessing the power of AI, personalized interventions can be tailored for each child, marking a remarkable step forward in our ability to combat metabolic syndrome and reduce the burden of cardiovascular disease."

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