


# Limitations and Future Directions for Research on Biomarkers and Endothelial Dysfunction in UAE Youth [Letter]

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## Dear editor

We commend Sharma et al<sup>1</sup> for their recent study investigating the association between dyslipidemia, inflammation, oxidative stress biomarkers, and endothelial dysfunction (ED) in obese youth in the UAE. While this research offers valuable insights, addressing key limitations could enhance the study's comprehensive understanding and practical implications.

The study primarily focuses on key biomarkers related to dyslipidemia, inflammation, oxidative stress, and ED, but overlooks the potential influence of lifestyle and socioeconomic factors. These factors, including dietary patterns, physical activity, and socioeconomic status, can significantly impact cardiovascular health and potentially confound the observed associations. For instance, research has shown that lower socioeconomic status is linked to decreased adherence to healthier diets and a higher prevalence of cardiovascular risk factors.<sup>2</sup> Thus, not accounting for these factors may limit the study's ability to fully capture the complex interplay of influences on cardiovascular risk in obese youth.

Furthermore, the study's reliance on body mass index (BMI) as the sole indicator of obesity raises concerns. While convenient, BMI may not accurately reflect body composition, particularly in individuals with different ethnicities and body fat distributions.<sup>3</sup> Incorporating additional measures, such as waist circumference, body fat percentage, or visceral fat assessment, would provide a more nuanced understanding of the relationship between obesity and ED.

While Sharma et al<sup>1</sup> establish a link between the identified biomarkers and ED, the study does not investigate whether these biomarkers predict actual clinical outcomes, such as heart attacks, strokes, or mortality. Understanding the prognostic value of these biomarkers necessitates longitudinal studies that track patients over time and correlate biomarker levels with tangible clinical endpoints like cardiovascular events. This approach has proven invaluable in other research settings, underscoring the importance of longitudinal studies in establishing the clinical relevance of biomarkers for cardiovascular disease.<sup>4</sup>

Given the UAE's rich ethnic diversity, it is crucial that future research delve deeper into potential variations in biomarker associations and ED prevalence among different ethnic groups. By examining these potential differences through stratified analyses or subgroup comparisons, researchers could uncover unique risk factor profiles and tailor interventions for specific populations. Furthermore, incorporating genetic analyses, as demonstrated in the study by Wang et al<sup>5</sup> on genetic risk scores for coronary heart disease across diverse ancestries, could elucidate the contribution of genetic factors to these associations and further inform personalized treatment approaches.<sup>5</sup>

In conclusion, while the study made valuable contributions, addressing these limitations through larger, more diverse samples, comprehensive assessments of obesity and confounding factors, investigation of clinical outcomes, and exploration of ethnic and genetic influences is essential for developing effective prevention and treatment strategies for cardiovascular disease in this vulnerable population.

## Disclosure

The authors report no conflicts of interest in this communication.

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