

LETTER TO THE EDITOR

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A comment on “The impact of metabolic heterogeneity of obesity and transitions on cardiovascular disease incidence in Chinese middle-aged and elderly population: a nationwide prospective cohort study”

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To the Editor,

We have read with great interest a nationwide prospective cohort study recently published online in “DIABETES OBESITY & METABOLISM” performed by Qiang He et al. [1]. This study investigated, for the first time, the relationship between obesity, BMI-metabolic phenotype, and cardiovascular disease (CVD) risk in a middle-aged and elderly Chinese population. The authors evaluated the impact of changes in metabolic health status on the incidence of CVD and proposed appropriate prevention and treatment measures for different populations with different BMI-metabolic phenotypes. Their study is of great significance and contributes significantly to the improvement of cardiovascular health in the middle-aged

and elderly population in China, especially in the metabolically unhealthy and obese population.

The authors included four of the metabolic syndrome (MetS) criteria in their definition of a subject's metabolic state, including impaired glycemic control, hypertension, high triglyceride (TG) levels, and low high-density lipoprotein (HDL-C) levels. Subjects who met at least two of these criteria were considered to be metabolically unhealthy. However, waist circumference (WC) was excluded as an important component of MetS, which may affect the analysis of the association between obesity and metabolic risk. WC is not only a direct measure of central obesity, but also a valid marker of visceral fat accumulation, which is strongly associated with MetS components such as insulin resistance, diabetes, hypertension, and dyslipidemia, as well as a potential risk factor for cardiac disease [2]. A research study showed a relatively higher correlation between WC and all MetS components, which is considered a more accurate risk indicator than other anthropometric indices, implying a high intrinsic association between WC and the metabolic health status of the body [3]. Therefore, ignoring WC may lead to an incomplete assessment of an individual's metabolic health status, especially missing important information when analyzing the association between obesity and CVD risk.

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In the assessment of covariates, the authors included several factors that could have adversely affected this study, including age, sex, and status of smoking and drinking, which helped to exclude the influence of confounding factors and improve the accuracy of the results. Among these, the role of place of residence (rural and urban) in the development of CVD was emphasized, with urban MUOO populations, in particular, being more susceptible to CVD. However, for the whole country, and especially for a country as vast as China, in addition to the rural-urban differences, the differences between south and north (or east and west, or other regions, depending on the geographical and racial characteristics of the country under study), which may negatively affect the results of the study, should be taken into account even more. In a national population-based survey of a total of 480,687 adults from 31 provinces in China in 2013, statistically significant geographic differences in the prevalence of stroke were found between regions [4], demonstrating the important influence of geographic factors on disease incidence. Such geographical differences in disease incidence may be caused by a variety of factors such as climatic environment, economic status, medical conditions, as well as the population's physical fitness, dietary habits, and lifestyle. It is therefore important to pay particular attention to the influence of geographical or racial differences when conducting prospective studies with large samples, on a large scale, or even on a national scale.

This study evaluated the association between metabolic heterogeneity of obesity and CVD incidence and concluded that improving obesity and metabolic status is effective in reducing the risk of CVD. Meanwhile, metabolic health status was found to be more significant for CVD than obesity. Therefore, the MUOO population is considered a key target for CVD prevention, and clinical and communal health interventions are proposed. However, the article lacks an in-depth analysis of the biological mechanisms by which altered metabolic health status affects CVD, particularly in exploring the possible reasons why the MUOO population is most at risk of developing CVD. In addition, differences in inflammatory markers such as CRP and IL-6 in individuals with different health states were mentioned, but the relationship between altered inflammatory factors and altered metabolic health states and CVD risk was not further discussed in the context of the relevant literature, which is an important adjunct that could enhance the persuasiveness of the findings of this survey study. It has been documented that the patients with CVD, MetS, and obesity tend to have higher levels of CRP [5], suggesting that CRP does have predictive value for CVD.

In conclusion, we hope that the recommendations in this letter will help researchers and future studies to better understand the relationship between the metabolic heterogeneity of obesity and its state transitions and CVD risk to better guide clinical and community-based prevention and treatment, which can help to improve the quality of life of the middle-aged and elderly population.

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Author contributions

Jinxiang Han and Meina Yang contributed to the study design and manuscript review, Zhiying Wang interpreted the article and prepared the initial draft, and Baorui Cao revised the manuscript.

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Consent for publication

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Competing interests

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