

A commentary on 'Association between the weight-adjusted-waist index and familial hypercholesterolemia: A cross-sectional study'

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Commentary

Familial hypercholesterolemia (FH) is a common inherited metabolic disorder characterized by abnormally high blood levels of low-density lipoprotein cholesterol (LDL-C). Depending on the mode of inheritance, FH is mainly divided into two subtypes: heterozygous FH (HeFH) and homozygous FH (HoFH). Prolonged high LDL-C levels not only put patients at risk for premature coronary artery disease (CAD), but also increase the severity of the disease, posing a significant threat to the patient's physical and mental health, as well as the financial burden of healthcare. The pathogenesis of familial hypercholesterolemia is complex and involves the interaction of multiple genes and environmental factors [1]. Obesity on the other hand, is one of the risk factors for familial hypercholesterolemia. It has been shown that more than half of adults with heterozygous FH (HeFH) are overweight or obese, and that obesity is independently associated with an increased prevalence of CAD in this population [2]. Therefore, it is crucial to establish valid and accurate indicators for the assessment of obesity. The weight-adjusted waist index (WWI) is a novel measure of obesity. Compared with body mass index (BMI), waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR), the WWI, by combining the data of waist circumference and body weight, can not only more accurately assess an individual's central obesity status, but also more accurately demonstrate the correlation between obesity and FH. The NHANES database, known as the National Health and Nutrition Examination Survey (NHANES), is designed to monitor health trends and lifestyle changes in the U.S. population through comprehensive health and nutritional assessments, and is a representative national health and nutrition survey program in the United States. We carefully read the article recently published in *BMC Cardiovasc Disord* by Xuan Lyu and other scholars. The authors used cross-sectional NHANES data from 2017 to March 2020, analyzing data from a total of 3,698 participants. Correlations between WWI and FH were examined through multivariate logistic regression and smooth curve fitting, and subgroup analyses and interaction tests were performed. The study found that the overall prevalence of FH was 5.43% and increased with increasing WWI. The prevalence of FH in the highest WWI group was 4.60 times higher than that in the lowest group. In addition, there was a statistically significant interaction between WWI and personal and family history of premature atherosclerotic cardiovascular disease (ASCVD) and prevalence of FH. The superiority of this study lies in the use of a stratified multistage probability sampling method based on NHANES data, a strategy that enhances the reliability and representativeness of the findings. As well as the use of WWI, a new obesity assessment index, to explore the relationship with FH, which may provide new ideas for the prevention and treatment of other diseases. On this basis, we queried the literature on

hematology. Obesity is recognized as a low-grade inflammatory state that is strongly associated not only with changes in leukocytes, red blood cells, platelets, and thrombotic risk, but also with increased platelet counts and an elevated risk of venous thromboembolism (VTE) [3]. The relationship between body mass index (BMI) and plasma protein levels has been explored through high-throughput proteomic association studies. BMI has been associated with plasma levels of a number of proteins, 24 of which may be causally affected by BMI, whereas 6 proteins may play a causal role in the development of obesity [4]. In addition, we found that most scholars in blood disorders research use BMI as a calculation of the degree of obesity in an individual, but it has an obvious limitation of not being able to differentiate between central and peripheral adiposity. Inspired by the Association between the weight-adjusted-waist index and Familial hypercholesterolemia: a cross-sectional study, we believe that we can selectively increase the WWI to provide a better understanding of body fat distribution from a body fat distribution to provide a more comprehensive perspective on the assessment of obesity and its associated health risks. While we applaud the results of this study, we also note the problems with the source of the sample in the trial and the absence of key steps. In the field of academic research, cross-sectional studies are unable to establish a direct causal link between variables due to their design limitations. A case in point is the study addressing the association between weight-adjusted waist circumference index and hypertension. The present study failed to directly demonstrate a causal association between familial hypercholesterolemia and WWI; therefore, in order to validate this association, a longitudinal cohort study is recommended for further exploration. This method of study can provide time-series data and help to reveal the possible causal chain between the two. Considering that the present study was based on the NHANES database, whose data mainly reflect the US population, we suggest that more research work is needed on the generalizability of the study findings to other parts of the world and to different ethnic groups. This study focused on the adult population, but its applicability to the adolescent population has not been fully validated. And due to the limited sample size, we believe that a wider sample is needed to further confirm the findings of the results. In addition, despite adjusting for as many covariates as possible, familial hypercholesterolemia is influenced by many factors, some of which are not captured by the NHANES database or potential confounders are not accounted for, such as dietary habits, lifestyle, and socioeconomic status, which should also be controlled for in the analysis. Finally, for the diagnosis of FH, it is recommended to include genetic testing as one of the means of confirming the diagnosis to rule out other types of hyperlipidemia. This may require collaboration with a genetics expert or utilization of existing genetic databases. In summary, we honor and appreciate the work of Xuan Lyu and other researchers. Their study has made a notable contribution in exploring the relationship between familial hypercholesterolemia and weight-adjusted waist circumference index and has laid a solid foundation for future research. Despite the value and far-reaching implications of this work, we likewise point out a number of areas for further improvement in order to achieve more effective advances in future studies and to advance the development of targeted therapies.

Ethical approval

Our submitted manuscript does not involve any patients therefore, ethical approval is not required.

Consent

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Authors' Contribution

SX, WY, XL, FW, CW participated in original idea and writing the first draft. SX, WY, WM, MY edited the final manuscript. SX and WY contributed equally to this work. All authors approved the last version of this manuscript.

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Conflicts of Interest Disclosure

There are no conflicts of interest.

Consent for Publication

Not applicable.

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