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Analysis and consideration of obesity types in South Asians

Chenyue Wang

Nanjing University of Science and Technology, School of Chemistry and Chemical Engineering, Nanjing, Jiangsu, 025 210000, China

15158082427@163.com.

Abstract. In recent years, the proportion of obese people in the world has been increasing, and obesity has become a global health problem. Among them, according to the existing literature, the incidence of central obesity is higher in the South Asian population, which is different from the type of obesity in the Caucasian population. In this paper, a literature review was used to search relevant literature from Google Scholar, and the keywords were South Asian, Caucasian, central obesity, metabolic syndrome, difference, treatment, dilemma, etc. It is found that the central obesity of South Asian people is related to its genes, lifestyle, diet, etc. In addition, the central obesity of South Asian people is more likely to cause cardiovascular disease, diabetes and other metabolic diseases. Due to the influence of social and cultural factors, there are many difficulties in the treatment of obesity in South Asia, and the treatment of central obesity in South Asia needs further exploration and development.

Keywords: South Asians, central obesity, complications, dilemma.

1. Introduction

More than 1 billion people will be obese globally in 2022, according to a new research report. Since 1990, the number of adults has more than doubled, and children and adolescents (5 to 19) obesity increased three times, according to the data from World Health Organization, March 1, 2024. Obesity causes metabolic diseases including diabetes, high blood pressure, high blood lipids and others [1]. However, most studies have focused on Caucasians, while the Asian population, which accounts for nearly 60% of the world's population, has not received due attention. Interestingly, according to the result from Our World in Data, South Asians do not have the highest rates of obesity in the world, yet have a higher prevalence of diabetes than most countries, which may be related to the type of obesity among them. Overall, South Asians are more likely to suffer from central obesity, and this disease affects South Asians more than Caucasians. This article summarizes the research data of multiple literature on the above two issues, and discusses the controversy, hoping to contribute to the treatment of central obesity in South Asia.

2. The Prevalence of Obesity in South Asians

In South Asian nations, obesity is becoming more common in both urban and rural areas. The data indicates that the prevalence rates for men and women in urban India are 10.1% and 15.1% (2003), 20.8% and 32.3% (2004) [2], and 43.2 and 47.4% (2007) [3]. A rise in the incidence in rural areas, up from 8% in 1997 to 54% in 2007, 41.4% of the 32.4% of men and women [4]. Concerningly, obesity among

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children has also increased: in North India, it went from 16% in 2002 to roughly 24% in 2006, while in South India, it went from 4.9% in 2003 to 6.6% in 2005. Similar trends of rising obesity have also been seen in other South Asian nations: in Sri Lanka, it was 20.3% among men and 36.5% among women (2005) [5], compared with earlier reported prevalence of 15% to 18% [6].

At the same time, the study also found that compared with whites, South Asians' fat is more focused on the abdomen and the waist-to-hip ratio (WHR) is generally higher than that of other races [7, 8]. It shows that the South Asian centripetal obesity rate is higher. A study of Asian Indians and white Americans of European descent finds that with similar cases in BMI, Asian Indian immigrants and abdominal adipose tissue significantly higher total abdominal fat [9]. Some researchers reported that South Asians' torso subcutaneous adipose tissue thicker than whites, which has a connection to the metabolic syndrome [10].

3. Impact of Central Obesity on South Asians

Metabolic syndrome and insulin resistance studies have shown that insulin resistance is common in South Asians and is more likely to occur at an early stage. In several studies of Bangladeshis, Pakistanis, and Indians, insulin sensitivity and glucose disposition were found to be lower than in Caucasian Americans of European ancestry, even after accounting for skinfold thickness in the trunk and overall body fat [11]. Also, compared with whites, metabolic syndrome is more common in South Asia. In addition, compared with the UK white, patients with the metabolic syndrome of South Asians revealed lower levels of high-density lipoprotein cholesterol (HDL-C), faster insulin, increased diastolic blood pressure, and plasma triglycerides [12].

In the life in the city of the society of south Asian (Indian, Pakistani and Bangladeshi) seed, non-insulin-dependent diabetes prevalence rate is much higher than the Europeans [9]. At the same time, South Asians have a shorter duration of diabetes than Caucasians, which may be due to the greater variety of complications and more severe consequences of diabetes in South Asians, and therefore lower 10-year survival rates than Caucasians [13, 14].

4. Factors Influencing the Incidence of Central Obesity in Asian Populations

4.1. Genetic Influence

According to the existing research, genetic factors play an important role in the development of obesity. MC4R gene mutations, for instance, are one of the most common forms of single-gene obesity, such mutations can lead to severe obesity symptoms. In addition, a common variation of the FTO gene and body mass index (BMI) and obesity has a significant correlation.

However, when we focus on South Asian population, it seems more complicated. Studies show that people in South Asia, compared with Europeans, centricity have a higher risk of obesity, but within the scope of the genome-wide association studies, did not find and WHR a common genetic variation of significant correlation [15]. This suggests that, despite south Asian population of central obesity is more sensitive, it is unclear whether the increased risk is mainly driven by a specific genetic variation.

Although genetic factors play a key role in the occurrence of obesity, but the crowd in South Asia, especially for central obesity, the evidence is not sufficient to support a particular importance of genetic variation. This may be due to the complexity of the genetic background, environmental factors, and the interactions between the two.

4.2. The Way of Life

Lifestyle factors had a significant impact on central obesity in South Asians. Studies show that obesity among South Asians and centripetal obesity is closely related to poor diet and lack of exercise, the decline in physical activity, unhealthy eating patterns, as well as the overall sedentary lifestyle[16], south Asian population is one of the main reasons for rapid increase centrality obesity. Using the longitudinal multiethnic EpiDREAM cohort of 17,423 subjects, including 2760 individuals of South Asian ancestry, Reddon et al. report that intense physical activity improves obesity in a genetically predisposed subgroup.

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These lifestyle changes and genetic susceptibility interact, with the incidence of cardiovascular metabolic diseases [17].

4.3. Environmental Factors

Studies have also found that urban residents have a higher prevalence of central obesity than rural residents. For example, in a survey of 8560 urban and rural residents aged 18 and above in Guangxi, China, the average WC was 73.60±9.49cm, and it was significantly higher in men (75.99±9.38cm) than in women (71.77±9.15cm). Urban residents (76.53 + / - 10.03 cm) is significantly higher than the countryside (70.57 + / - 7.81 cm), at the same time, residents of Guangxi centripetal obesity standardized prevalence rate was 16.90%, the city (25.28%) is significantly higher than rural (8.23%) ($P < 0.01$) [18]. This may be related to the way of life in urban areas, such as low level of physical activity and a higher level of income.

4.4. Cultural Adaptation Factors

Cultural adaptation, that is, individuals with the host or dominant cultural interaction in the cultural and psychological changes. In a variety of ethnic mixes of Asia's population, cultural adaptation levels and a link between obesity and related lifestyle behaviour. In Singapore, for example, a variety of ethnic groups in the study, a higher level of cultural adaptation is directly related to the Chinese obesity rates, and for the Indians are a negative correlation [19]. This suggests that cultural adaptation may by changing diet and lifestyle to affect the incidence of obesity.

4.5. Dietary Factors

It is reported that South Asians consume less fibre and monounsaturated fatty acids while consuming higher levels of carbs, trans fats, saturated fatty acids, and ω-6 fatty acids [20]. Burden et al. found that there was a positive correlation between higher fasting blood glucose levels and South Asian diets' greater carbohydrate content (percent energy) compared to European diets [21]. Another contributing factor to insulin resistance in Asian Indians could be the dietary imbalance between ω-3 and ω-6 polyunsaturated fatty acids. Significantly, in comparison to Europeans, South Asians consume a larger proportion of polyunsaturated fatty acids (ω–6) in total fatty acids and a smaller proportion of long chain ω–3 polyunsaturated fatty acids [22]. In addition, south Asian consumption of fresh fruits, vegetables, and fiber is less than the of white [23]. These unbalanced dietary factors have enormous impacts on cardiometabolic disease in South Asians.

5. Current Status of Treatment of Obesity

5.1. Gene Therapy

Gene therapy techniques in the treatment of South Asia in the crowd the latest progress of centrality obesity is mainly in a better understanding of the molecular mechanisms of obesity and the development of new treatments. In recent years, with the understanding of the molecular basis of obesity, especially the black cortical hormone leptin - -axis, the mechanism of action of wide research, provides a theoretical basis for gene therapy [24, 25].

In addition, by using recombinant leptin therapy, it is possible to correct the symptoms of obesity due to leptin deficiency, such as increased appetite and decreased energy expenditure. In addition, new vector systems, such as adeno-associated virus-based systems, have been developed for efficient and sustained expression of transgenes, which provides technical support for gene therapy in obesity.

5.2. Treatment Of Traditional Chinese Medicine

In addition, traditional Chinese medicine (TCM) has been gradually applied to the treatment of central obesity in recent years. First of all, there are various theoretical bases and methods of traditional Chinese medicine in the treatment of obesity, including regulating the functions of the spleen, stomach, liver, gallbladder, kidney and other viscera, and using the theory of "simultaneous application of ascension

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and descent" to treat central obesity [26]. In addition, TCM treats obesity by increasing insulin sensitivity, regulating lipid metabolism, and regulating the generation and differentiation of adipocytes [27].

6. Existing Dilemmas in Treatment

The current treatment dilemma for South Asians with central obesity is a complex and multidimensional issue, involving diagnostic criteria, treatment methods, and cultural and social factors.

First of all, the diagnostic criteria for central obesity vary across regions and cultures. A crowd in South Asia, as a result of ethnic-specific health and lifestyle, the traditional BMI and WHR may not be able to accurately reflect the status of their obesity. This led to high rates of obesity and related metabolic diseases are at increased risk. Therefore, suitable for the diagnostic criteria for effective identification and treatment of South Asian centrality obesity is very important.

Second, although South Asians are generally aware of the possible health risks associated with obesity, their self-perceptions of their weight and health are often inaccurate. For example, one study found that most participants underestimated their weight status and the impact of their weight on their risk of chronic disease [28]. This misunderstanding can lead them to set unrealistic goals when seeking treatment, which can affect the effectiveness of treatment.

In addition, the treatment response of South Asians was also influenced by their perception of obesity management approaches. In a survey of West Indian patients with type 2 diabetes mellitus(T2DM), while the majority of respondents identified dietary counselling and fitness as the main methods for weight loss, only a minority were willing to try weight loss medications prescribed by their doctors [29]. This suggests that improving the knowledge and awareness of obesity and its management among South Asians is key to improving treatment outcomes.

7. Conclusion

Along with the rapid development era, "industrialization", "westernization" and the resulting change in lifestyle made in the South Asian population rising obesity rates increased the social burden. Compared with whites, abdominal and trunk obesity in South Asians is thought to be blamed for the increased morbidity and mortality related to obesity complications. These losses are the results of factors including but not limited to genetics, living habits, the environment, environmental adaptation and so on. Interestingly, some studies have shown South Asians are different from whites when it comes to disease diagnosis and treatment response, which will further hinder their targeted treatment. Physicians also need to increase their awareness of the discrepancy in obesity between South Asians and Caucasians, which will lead to better treatment outcomes for South Asians.

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