

LETTERS TO THE EDITOR

Anthropometric measures: an original and effective OSA screening index

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With great interest we read the recent article by Vana et al,¹ published in a recent issue of the *Journal of Clinical Sleep Medicine*, and we congratulate the authors on their effort to further shed light into the relationship between obstructive sleep apnea (OSA) and anthropometric measures. This is an important field, and the connection of both has been incompletely investigated so far. OSA is a respiratory disease in which apneas occur repeatedly during sleep.² With the improvement of quality of life, OSA is becoming more and more common, and epidemiological studies have shown that the prevalence of OSA can reach 32.9%,³ so many patients with OSA are still undiagnosed. If undiagnosed and untreated, OSA can cause serious health consequences, which in turn leads to an increase in mortality.^{1,4} The direct and indirect costs of moderate to severe OSA are estimated to be between US \$65 billion and US \$165 billion per year in America.³

The results¹ show that in the derivation sample, when the cut-off point of neck circumference height ratio (NHR) is ≥ 0.21 , the sensitivity is 92.0%, and the specificity is 25.0%; when the cut-off point of waist circumference height ratio (WHR) is ≥ 0.52 , the sensitivity of moderate-to-severe OSA is 91.2% and the specificity is 25.0%. Using validation samples, the area under receiver operator curve (AUCs) of NHR, WHR, and derived STOP-Bang Questionnaire for moderate-to-severe OSA were 69.8%, 65.2%, and 70.5%, respectively. There is no statistical difference between NHR and derived STOP-Bang Questionnaire in AUC ($P = .997$), but there is a significant difference between WHR and derived STOP-Bang Questionnaire AUC ($P = .015$). The NHR is a credible OSA screening tool. The NHR does not rely on body mass index and is important in remote areas that do not have sleep clinics.

Obesity, especially morbid obesity, can cause many serious complications such as sleep disorder.⁵ Relevant research shows that people who are overweight and obese are more likely to develop OSA.⁶ Anthropometric measures are important tools for obesity assessment, such as body mass index, neck circumference, waist circumference, NHR, and WHR, etc.^{3,7,8} However, the measurement of central obesity shows that it is more accurate than body mass index in terms of the risk of sleep disorder.⁷ And sex affected the prevalence, severity, and symptomology of OSA.⁹

We analyze the data of China National Respiratory Medicine Center, using the cut-off point of WHR ≥ 0.52 and NHR ≥ 0.21 .

Among men, compared with the NoSAS score. Epworth Sleepiness Scale, and STOP-Bang questionnaires, with cut-off points of apnea-hypopnea index 5, 15, and 30 events/h, the sensitivity of NHR is the highest, which is 0.922, 0.935, and 0.957, respectively. AUC is 0.673, 0.686, 0.664, respectively. Among women, when apnea-hypopnea was 5, 15, and 30 events/h as the cut-off point, the sensitivity and negative predictive value of WHR were the highest, 0.873 and 0.728, 0.906 and 0.895, 0.921 and 0.956, respectively; AUC was 0.695, 0.695, and 0.692, respectively. NHR is more effective in screening OSA for male patients, while WHR is better for women.

Anthropometric measures are economical and easy-to-manage screening tools worthy of vigorous promotion. The results in the mixed-sex population may overestimate the screening value of anthropometric measures, and it is recommended to report in a sex-stratified manner.

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