Sleep Quality's Relationship with Obesity, Sarcopenia, Sarcopenic Obesity among Chinese Women

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Introduction

• Sarcopenia, age-related skeletal muscle loss, and obesity, increased body fat mass occur in significant proportions of middle-aged and elderly populations. A combination of low muscle and excess body fat is referred to as sarcopenic obesity.

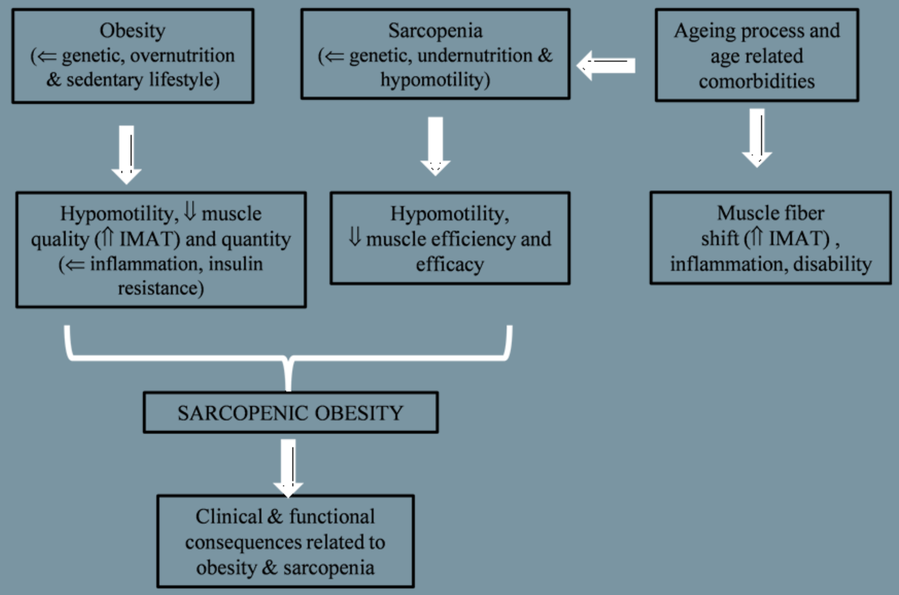
•The academic literature has suggested that sleep may be a risk factor for sarcopenia and/or obesity. Several studies have examined the relationship between sleep quality and obesity, with mixed evidence for suggesting that poor sleep quality is associated with obesity. There is limited evidence or past work that has been done to rigorously analyze the associations between sleep quality and sarcopenia, as well as sleep quality and sarcopenic obesity.

•The aim of this study was to investigate the relationship of sleep quality with obesity, sacropenia, and sarcopenic obesity in Chinese women.

Methods

•A total of 3144 women, aged 18-80 were included from a Lanxi, China cohort. Sleep quality for each study participantwas measured using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Dual-energy X-ray absorptiometry was utilized to measure body fat mass and relative appendicular skeletal muscle mass (RASM). Participants were classified according to weight condition and age group.

•Multivariate linear regression and multinomial logistic regression were conducted to evaluate the associations of sleep quality with percent body fat (BF%), RASM parameters, obesity, sarcopenia, and SO in total and in age stratified groups, respectively.



Results

Poor sleep quality was significantly associated with higher BF%, lower RASM parameters, and higher sarcopenia and SO risk. These associations were most robust in middle-aged group. Moreover, low sleep efficiency, sleep medicine use and getting out of bed late were related to higher sarcopenia and SO risk in the middle-aged group.

Table 3. The associations of sleep quality with obesity, sarcopenia, and sarcopenic obesity in Chinese women in total and by age groups

	Total (n=2838)		Aged<45 (n=715)		Age 45-64 (n=1628)		Aged≥65 (n=495)	
	OR (95%CI)	P value	OR (95%CI)	P value	OR (95%CI)	P value	OR (95%CI)	P value
Normal	1.00		1.00		1.00		1.00	
Obesity	1.20 (0.84, 1.70)	0.317	**0.31 (0.10, 0.92) ***	**0.035**	**1.71 (1.11, 2.66) ***	**0.016**	0.78 (0.36, 1.68)	0.520
Sarcopenia	**1.65 (1.11, 2.46) ***	**0.014**	1.33 (0.60, 2.95)	0.487	**2.13 (1.20, 3.77) ***	**0.010**	0.94 (0.37, 2.38)	0.893
Sarcopenic obesity	**1.98 (1.28, 3.07) ****	**0.002**	0.91 (0.26, 3.25)	0.889	**2.21 (1.24, 3.94) ****	**0.007**	2.24 (0.86, 5.84)	0.098

Covariates included in the regression model were age, menopausal status, body mass, height, drinking, physical activity, education, hs-CRP, metabolic diseases and cohort.

*p<0.05, **p<0.01, ***p<0.001.

Discussion

•The study had several strengths. First, it was based on a large study population, making statistical results more reliable. Second, fat mass and appendicular lean mass was measured by DXA, which is considered more accurate compared with bioimpedance analysis. Third, classifying age into three separate categories and further analyzing sleep components enhanced understanding of the underlying associations of interest.

•However, limitations of this study should also be noted. Because of the cross-sectional design, a causal relationship of sleep quality with obesity, sarcopenia and sarcopenic obesity should not be inferred. The self-reported response format for reporting sleep quality problems may potentially cause a recall bias.

Conclusion

This study suggests that a therapeutic approach targeting sleep quality may be applied to prevent or treat sarcopenia and sarcopenic obesity. Further studies are necessary to confirm and expand upon findings.

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