Effects of Circadian Syndrome and Metabolic Syndrome on Subjective and Objective Cognitive Function: A Postprint of a Cross-Sectional Study Based on the Pingyin Cohort

Authors: Zhang Luyi, Yu Ruihong, Wang Qi, Zhang Xiaoyu, Li Xiang, Wang Zhongxuan, Zhu Dongshan, Zhu Dongshan

Date: 2025-04-07T00:00:00+00:00

Abstract

Background Current research findings on metabolic syndrome (MetS) and cognitive function remain inconsistent, and there is a lack of research on circadian rhythm syndrome (CircS) and subjective cognitive function.

Objective To analyze the effects of CircS and MetS on subjective and objective cognitive function, and to provide a theoretical basis for the early prevention and intervention of cognitive decline and dementia.

Methods The Pingyin Cohort Study was initiated in July 2023 in Pingyin County, Shandong Province. The study employed a multistage cluster random sampling method, selecting 7 villages from 3 townships as the study sample, with permanent residents aged 45-70 years as the study subjects. MetS was defined using harmonized criteria, while CircS included components of MetS as well as short sleep duration and depression. Participants' subjective and objective cognitive function were assessed using the Subjective Cognitive Decline Questionnaire (SCD-Q9) and the Montreal Cognitive Assessment Basic (MoCA-B), respectively. Multivariable linear regression models were used to analyze the associations of CircS and MetS with subjective and objective cognitive scores, and multivariate logistic regression analysis was employed to explore the effects of CircS and MetS on abnormal subjective and objective cognitive scores.

Results A total of 2,187 individuals were surveyed at baseline, yielding 2,165 valid samples. This study utilized baseline survey data; after excluding individuals with missing CircS diagnostic data and covariates, 1,939 participants were ultimately included. The prevalence of MetS and CircS among participants was 48.2% (934/1,939) and 31.5% (611/1,939), respectively. A total of 356 (18.4%) and 33 (1.7%) participants had MetS or CircS alone, respectively,

while 578 (29.8%) participants had both CircS and MetS. Results from the multivariable linear regression models showed that, compared with healthy individuals, females with MetS alone had lower SCD-Q9 scores (β=-0.487, 95%CI=-0.875~-0.099), males with MetS alone had higher MoCA-B scores (β=1.097, 95%CI=0.261~1.934), the entire population with CircS alone had higher SCD-Q9 scores (β=1.643, 95%CI=0.765~2.521), and males with CircS alone had lower MoCA-B scores (β=-3.644, 95%CI=-6.323~-0.965). Results from the multivariate logistic regression analysis showed that the odds of abnormal SCD-Q9 scores in males and females with CircS alone were 10.46 times (95%CI=1.87~196.20) and 5.11 times (95%CI=1.85~18.03) those of healthy individuals, respectively, while the odds of abnormal SCD-Q9 scores in males and females with MetS alone were 0.62 times (95%CI=0.40~0.97) and 0.65 times (95%CI=0.47~0.91) those of healthy individuals, respectively. Additionally, short sleep duration was associated with abnormal SCD-Q9 scores (OR=1.79, 95%CI=1.44~2.22), and depressive symptoms were associated with both abnormal SCD-Q9 scores and abnormal MoCA-B scores (OR=4.75, 95%CI=3.41~6.72; OR=1.48, 95%CI=1.06~2.08).

Conclusion Patients with CircS exhibited more severe cognitive impairment, while patients with MetS without short sleep and depressive symptoms demonstrated better cognitive function. CircS may be an effective indicator for predicting the risk of subjective cognitive decline in middle-aged and elderly populations in China.

Full Text

Chinese General Practice

Website: https://www.chinagp.net
Email: zgqkyx@chinagp.net.cn

Section 1.2

Section 1.3

Section 1.4

Section 2

Section 2.1 Table 1
OR=, CI, OR=, CI, P<, P<, P>

Section 2.2 MetS , CircS

Section 2.3 MetS , CircS

Section 3

Table 3
P, P

Section 4

Table 4
P<

Section 5

Table 5
P, P, CI, CI
Table 6
P<

Section 6

Section 7

Table 7
P, P, P, P, CI, OR=

Note: Figure translations are in progress. See original paper for figures.