

Late chronotype and social jetlag are associated with burnout in shift workers:

Assessment using the Chinese-version MCTQshift

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Objective: Chronotypes are associated with shift work tolerance and sleep in shift workers, and sleep mediates the impact of shift work on mental health. In this study, we aimed to examine the association between chronotype and burnout in shift workers, using the validated Munich ChronoType Questionnaire for shift workers (MCTQshift).

Methods: A total of 288 shift workers with irregular shift frequencies were recruited and completed the Chinese-version MCTQshift and the Morningness–Eveningness Questionnaire (MEQ). Chronotypes were assessed by calculation of corrected mid-sleep time (MSFSC) from mid-sleep time on free days (MSF) based on their exact shift schedules. Another 26 evening-shift nurses were monitored with actigraphy for at least two consecutive evening shifts and the following 2 free days. Burnout was evaluated using the Copenhagen Burnout Inventory.

Results: We found that MSFESC, MSFE, and mid-sleep time on workdays (MSWE) had normal distributions and correlated significantly with MEQ scores ($r = -0.47$, -0.45 , and -0.47 , respectively; all $p < 0.001$). MSW was more closely correlated with actigraphy-derived mid-sleep time on the free day before workdays than that on workdays ($r = 0.61$ and 0.48 , respectively, $p < 0.05$). Sleep duration was significantly longer on workdays among evening shift workers with later MSW ($\beta = 0.59$, $p < 0.001$). After demographic and work characteristics were adjusted for in linear regression models, late chronotype and high social jetlag were associated with burnout scores in evening-shift workers.

Conclusion: The Chinese-version MCTQshift is a valid tool for chronotype assessment. Interventions to improve sleep should be tailored to chronotype due to individual variation in sleep behavior. Late chronotype may be an inherent feature of mental health problems, because the association with burnout was significant in both day workers in previous studies and shift workers.

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