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学 位 論 文 の 要 約  
( 研 究 成 果 の ま と め )

氏 名 Oyunsuren Munkhjargal

学位論文名 青年期における主観的眠気と客観的眠気の解離

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学位論文の要約

Introduction: Discrepancy between subjective and objective sleepiness is paradoxical in clinical practice, and can be challenging for sleep physicians in case management. For example, a person can be assessed as excessively sleepy by a self-reported screening tool, and not sleepy according to an objective test. Conversely, pathological sleepiness measured by an objective test may not be confirmed by a self-reported screening tool. Typically, when an individual feels sleepy, they recognize the condition and take corresponding measures (e.g., take a nap or seek stimulus). However, under the condition of objective sleepiness, it is not likely that an individual will seek help or take precautionary measures because they are unaware that they are sleepy. Moreover, the latter condition represents a safety issue. On the other hand, when excessive subjective sleepiness is observed in clinical practice, patient management is an issue. To date, the boundaries of tolerable daytime sleepiness are not well understood, and it is possible to only reliably identify extreme cases of pathologic sleepiness.

Therefore, the aims of the present study are to identify: a) how often discrepancy between subjective and objective sleepiness occurs, and b) what patient factors may be related to this discrepancy in adolescent populations.

Methods: This retrospective study included 211 pediatric patients who were aged 10–18 years at their first evaluation of both subjective and objective measurements. These patients underwent the MSLT and completed a Japanese version of the Epworth Sleepiness Scale (JESS) at the Center for Sleep Medicine of Ehime University Hospital between August 2011 and February 2021. These groups included: 1) concordantly sleepy (CS) - sleepy according to both the JESS (score  $\geq 11$ ) and the MSLT (MSL  $\leq 8.0$  min), 2) objectively sleepy (OS) - objective sleepiness without subjective sleepiness (JESS score  $< 11$ , MSL  $\leq 8.0$  min), 3) subjectively sleepy (SS) - subjective sleepiness without objective sleepiness (JESS score  $\geq 11$ , MSL  $> 8.0$  min), and 4) non-sleepy (NS) - not sleepy according to the JESS and MSLT (JESS score  $< 11$ , MSL  $> 8.0$  min). Discrepancy-related factors were identified with multivariable logistic regression analysis. The protocol for this study

was approved by the Institutional Review Board of Ehime University Hospital.

**Results:** The mean age of the participants in this study ( $n = 211$ ) was 14.8 y, and 63.03% were male. The MSL was 9.54 min (SD 5.13) and the mean JESS score was 12.76 (SD 5.23). The frequency of discrepancy between subjective and objective sleepiness was 46.4%, with 35.5% (75/211) of the patients exhibiting subjective sleepiness without objective sleepiness and 10.9% (23/211) of the patients exhibiting objective sleepiness without subjective sleepiness. Nearly half of the patients in this study exhibited discordant sleepiness (a discrepancy between subjective and objective sleepiness). Spearman's correlation between MSL and JESS scores was  $-0.23$  ( $p = .0006$ ). The age of the participants increased monotonically from NS group to CS group ( $p < .0001$ ). Multivariable regression analysis was conducted to further investigate the observed discrepancies. The OS and SS groups were compared to the CS and NS groups, respectively. When the CS group was set as the reference, younger age (odds ratio (OR) = 0.76, 95% confidence interval (CI): 0.59 to 0.98), lower sleep efficiency (OR = 0.93, 95% CI: 0.87 to 0.99), and NDD (OR = 6.83, 95% CI: 2.27 to 20.53) were significantly associated with subjective sleepiness. When the NS group was set as the reference, only later bedtime (OR = 1.87, 95% CI: 1.04 to 3.38) and NDD (OR = 4.11, 95% CI: 1.34 to 12.59) were associated with subjective sleepiness.

**Conclusions:** The frequency of discrepancy was substantially greater than expected, and it more often involved subjective sleepiness. Furthermore, age, later bedtimes, and neurodevelopmental disorders were identified as significant factors of subjective sleepiness without objective sleepiness.

Content of this paper is already published in the original article below.

Oyunsuren M, Oka Y, Tanno S, Shimizu H, Fujino Y, Kira T, Ooe A, Eguchi M, Higaki T: Discrepancy between subjective and objective sleepiness in adolescents. *Sleep Medicine* 96 (8):1-7, 2022. DOI: 10.1016/j.sleep.2022.04.025