Subjective Sleep Quality and Sleep Architecture in Patients With Migraine
A Meta-analysis

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Study Question
Is subjective sleep quality and objective sleep architecture different in people with and without migraine?

What Is Known and What This Paper Adds
Sleep disturbance is often associated with migraine, but the objective and subjective measures of sleep in people with migraine are not well understood. This investigation’s results show that compared with those without migraine, people with migraine have poorer subjective sleep quality and altered sleep architecture when compared with healthy controls (HCs).

Methods
For this meta-analysis, 5 databases (Embase, MEDLINE, Global Health, APA PsycINFO, and APA PsycArticles; last search date, December 17, 2020) were systematically searched to find case-controlled studies that collected polysomnography data, Pittsburgh Sleep Quality Index (PSQI) scores, or both from patients with migraine who were not pregnant and had no other headache disorders. Effect sizes were analyzed using a random effects model meta-analysis. The Newcastle Ottawa Scale was used to assess study quality and Egger’s regression to test to check for publication bias.

Results and Study Limitations
The database search identified 32 articles suitable for inclusion in the meta-analysis. Of these, 21 reported PSQI data for adults, 6 reported polysomnography data from adults, and 5 reported polysomnography data from children. The overall mean study quality score was 5 out of 9, and this did not moderate any of the results. There was no risk of publication bias. Overall, adults with migraine had higher PSQI scores than HCs (g = 0.75; 95% confidence interval [CI], 0.54 to 0.96). This effect was larger in patients with chronic migraine than in those with episodic migraine. For polysomnographic studies, adults and children with migraine had a lower percentage of REM sleep than HCs did (adults: g = −0.22; 95% CI, −0.41 to −0.04; children: g = −0.71; 95% CI, −1.34 to −0.10). Pediatric patients also had less total sleep time (g = −1.37; 95% CI, −2.66 to −0.10), more awake time (g = 0.52; 95% CI, 0.08 to 0.79), and shorter sleep onset latencies (g = −0.37; 95% CI, −0.54 to −0.21). The present study’s limitations include the heterogeneous, retrospective, and short-term nature of the included polysomnographic studies, and uncertainty as to whether patients were taking drugs that could affect sleep cycles.

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Figure Effect Sizes for Elevated PSQI Scores
Forest plot for study-level effect sizes for differences between patients and HCs in terms of PSQI scores.

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