

A Study of the Association of Sleep Duration and Screen Time with Headache Frequency in Children

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Background

Sleep deprivation is one of the common triggers for primary headaches. Approximately 42% of children with migraine and 65.7% of adolescents with headache report insufficient sleep [1,2]. The relationship between screen time and headaches remains unclear, with some studies reporting an association between screen time and migraines [3], while others found no significant correlation between monthly average headache frequency and screen time duration [4].

Objective

The purpose of this study is to determine whether sleep duration and length of screen time (Screen Time) are associated with headache frequency in children.

Methods

Patients aged 7-15 years who visited the Department of Pediatrics, Chiba Medical Center with a chief complaint of headache between April 2021 and April 2025, and whose sleep duration, screen time, and number of headaches per month were confirmed, were included in the study. Questionnaires, headache diaries, and electronic medical records were analyzed retrospectively, and cases with 14 or fewer headaches per month were classified as group A, and those with 15 or more headaches per month as group B.

Results

Patient characteristics

- A total of 59 patients were included, 26 in group A and 33 in group B.
- Group A had migraine alone or a mixture of migraine and frequent episodic tension-type headaches; group B had a mixture of chronic migraine, chronic tension-type headaches, new daily persistent headache and medication-overuse headache.
- The mean age of group A was 13 years (median 12.5 years) and 38.4% were girls; the mean age of group B was 11.5 years (median 12 years) and 66.7% were girls.

Sleep Duration and Screen Time

- Overall, 49.2% of the patients met the recommended sleep duration for their age, and 40.6% had less than the Screen Time recommended by the American Academy of Pediatrics (2 hours per day, 14 hours per week).
- Among the 14 people whose Screen Time was more than twice the recommended amount, only 4 (28.5%) had sleep time of less than 80% of the recommended amount.
- Children with headaches had shorter average sleep duration, and those with more headache days tended to have even shorter sleep duration. (Fig1)
- No case of less than 80% of the recommended sleep time was found in group A, but it was found in 7 cases in group B, which was significantly more. ($p=0.0145$) (Fig 2)
- On the other hand, there were 4 cases in Group A and 10 cases in Group B in whose Screen Time was more than twice the recommended amount, with no statistically significant difference between the groups. ($p=0.2274$) (Fig 3)

Conclusion

In this study, less than half of the children with headaches as their chief complaint had adequate sleep and adequate screen time. In particular, children who received less than 80% of the recommended amount of sleep were significantly more likely to have frequent headaches 15 or more days per month.

Fig 1 Average Sleep Duration

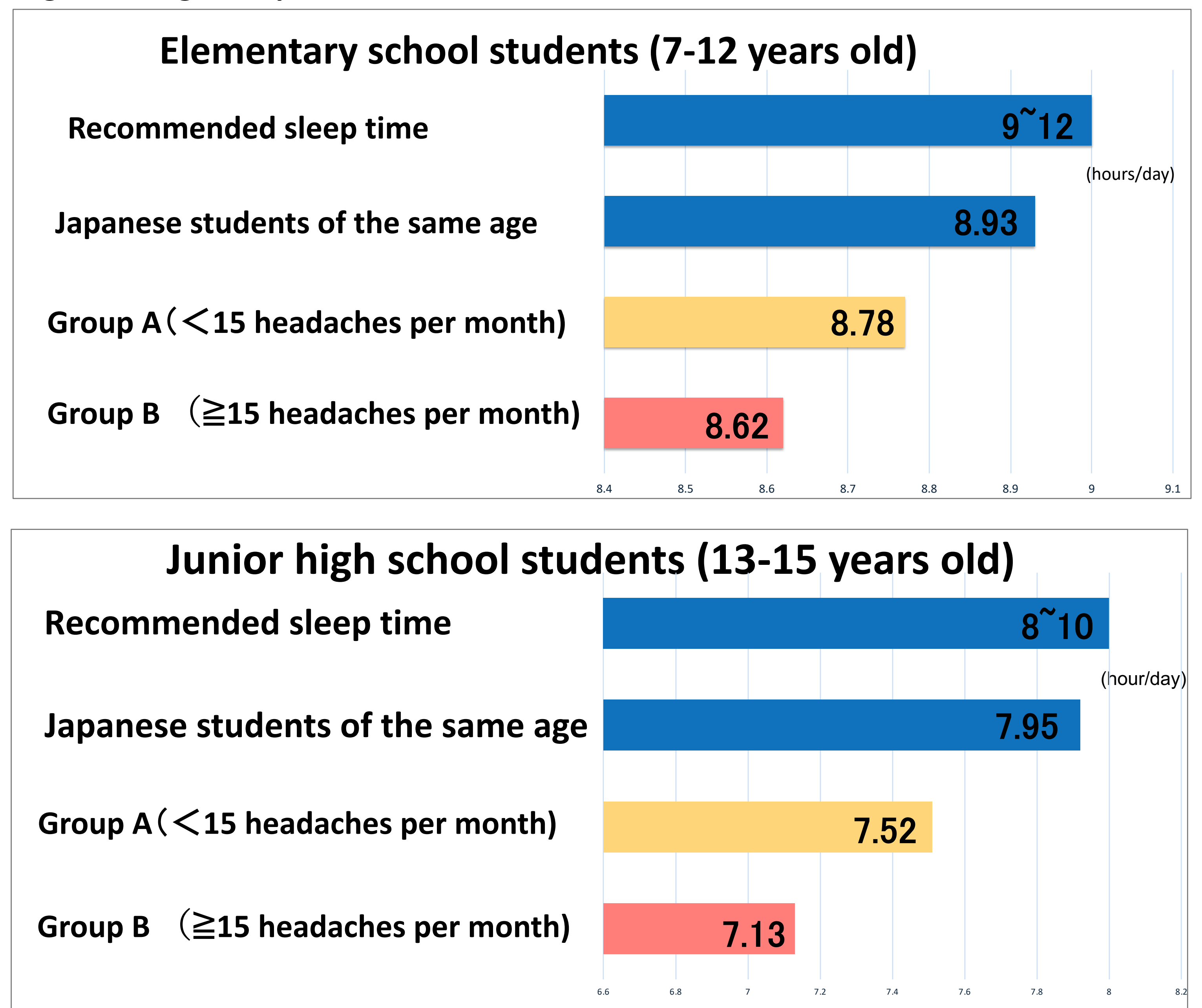


Fig2 Patient Counts by Sleep Duration Category and Headache Frequency Group


	≥ 80% of the recommended sleep time	< 80%of the recommended sleep time	P-value (chi-squared test)
Group A N=26	26 (100%)	0 (0 %) 	0.0145** **p < 0.05
Group B N=33	26 (79%)	7 (21%)	

Fig3 Patient Counts by Screen time Category and Headache Frequency Group

	Within twice the recommended time (≤28h /week)	More than twice the recommended time (>28h /week)	P-value (chi-squared test)
Group A N=26	22 (85%)	4 (15%)	0.2274
Group B N=33	23 (70%)	10 (30%)	

Discussion

- Children with headaches had shorter average sleep duration, and those with more headache days tended to have even shorter sleep duration.
- Previous reports indicate that educating students about sleep habits significantly reduced the average duration and frequency of migraine attacks [5]. Our current study could not examine whether sufficient sleep improves headaches. This is an important topic for future research.
- No statistically significant correlation was found between screen time and headache frequency. This time we only examined screen time duration and were unable to consider the use of blue light filters.
- Previous reports have suggested that effectively blocking short-wavelength blue light (480–500 nm) reduces the frequency of migraines [6]. Even with extended Screen Time, blocking blue light might make headaches less likely to occur.