

Sleep Patterns in Children with Prodromal Phase of Autism Spectrum Disorder

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Introduction

During the prodromal phase of autism spectrum disorder (ASD), when behavioural symptoms begin to appear, sleep problems are a frequent concern for the parents (Becerra-Cunqui et al., 2018). In general, sleep problems seem to get worse the 18 months of age onward when sleep starts to deviate from the normative sample (Humphreys et al., 2013). Studies in older autistic children indicate that sleep difficulties such as reduced total sleep time are related to more severe symptoms (Johnson et al., 2018). Understanding the sleep problems of prodromal ASD is essential so that support can be provided at the optimal time.

Aims

- The aim of this study is to describe sleep problems in toddlers with prodromal ASD screened from the general population. We focus on sleep latency, night awakenings, time spent awake at night and the total night-time sleep.
- We also compare sleep variables between the two groups of toddlers with low or high amounts of autistic traits.

Methods

Participants were recruited from on-going Gaze@Toddler - study in which toddlers are screened (M-CHAT-R/F) from the general population. Parents responded to a sleep questionnaire (BISQ & SDSC) about their toddler's sleep. Within 1,5 months of completing the sleep questionnaire, children aged 13-28 months ($N = 23$) were assessed with the ADOS-2 Toddler Module. The sample was divided into two categories based on the median scores of total ADOS scores.

Table 1. Sleep variables in low and high ADOS groups.

	Total (N=23)	High ADOS (N=9)	Low ADOS (N=14)
Gender (boys/girls)	14/9	4/5	10/4
Age in months	range 13-28 mean 18.7	13-28 22.0	15-18 16.6
ADOS-2 scores	range 6-26 mean 15.7	20-26 23.1	6-15 10.9
Total night-time sleep, hours	range 7.25-11.50 mean 10.16	7.25-11.00 9.92	8.50-11.50 10.32
Night awakenings, number	range 0-5 mean 1.17	0-3 1.00	0-5 1.29
Time spent awake at night, mins	range 0-150 mean 38	0-150 45	0-120 34
Sleep latency at least half an hour	22 %	33 %	14 %

Results

The findings indicated that any of the sleep variables did not differ significantly between the high and low groups. There was a trend of significance (Fisher's exact test, one-sided, $p = 0.06$) indicating that the parents in the high ADOS group reported their toddler having sleep problems compared to the low ADOS group (Fig1). When toddlers' night-time sleep duration was descriptively compared to the normative sample (CHILD-SLEEP & FinnBrain birth cohorts), the difference to the general population seemed to increase with age (Fig 2).

Fig 1. Parents' view of their child's sleep problems

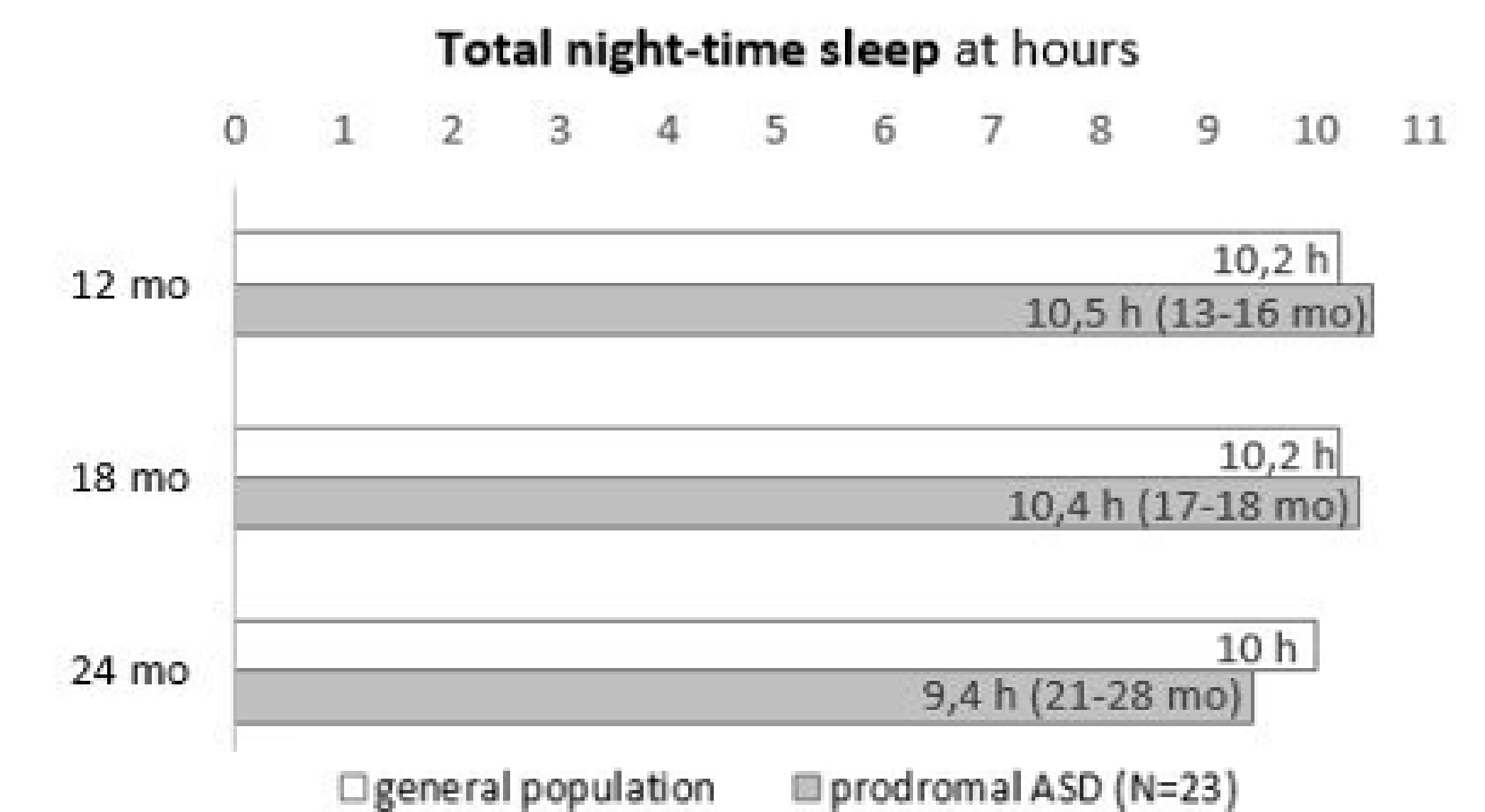
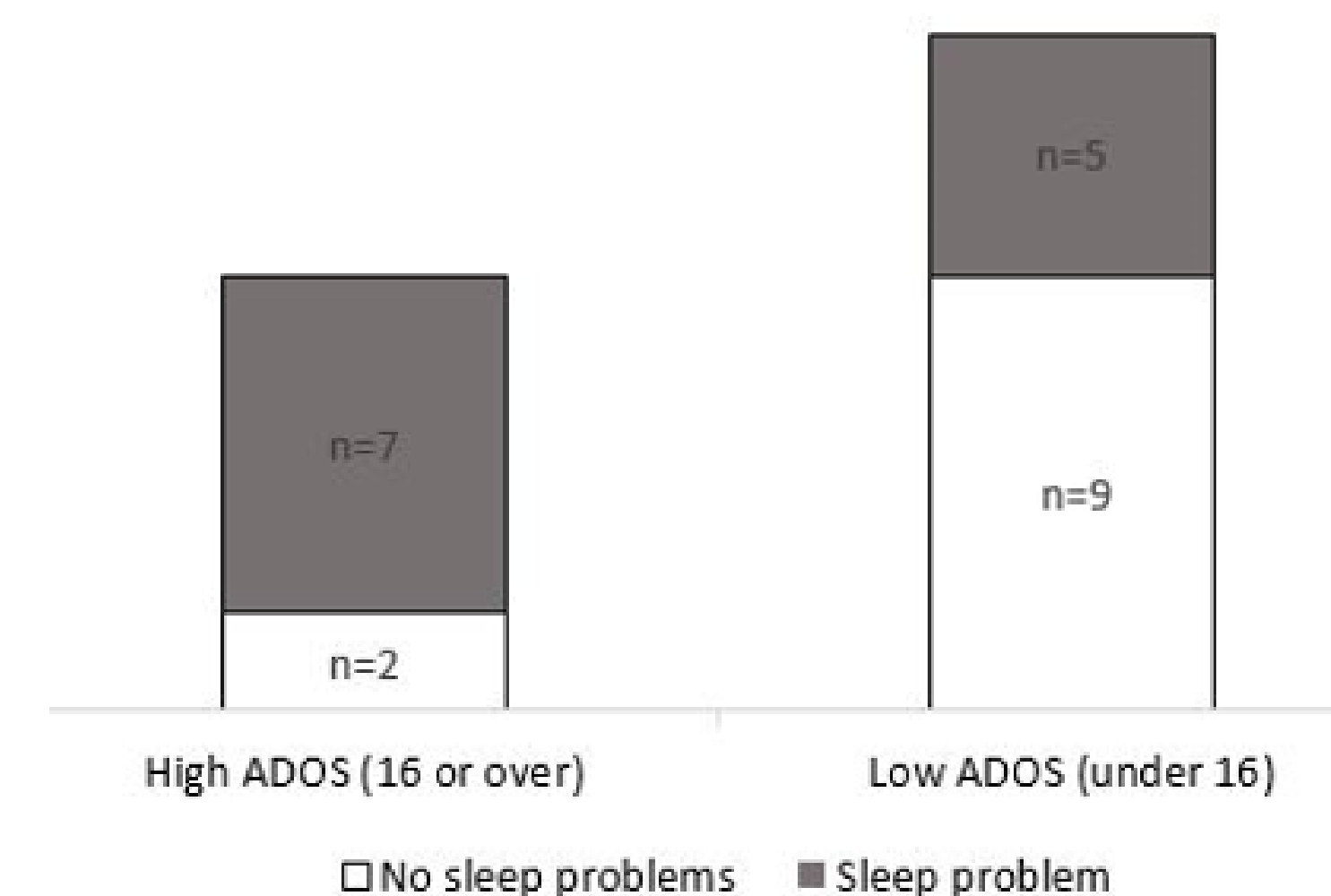


Fig 2. Total night-time sleep compared to the general population (published by Paavonen et al., 2020). Our sample was divided into three age categories: 13-16 mo ($N = 7$), 17-18 mo ($N = 10$) and 21-28 mo ($N = 6$) resembling the reference age groups: 12 mo ($N = 1693$), 18 mo ($N = 1163$) and 24 mo ($N = 940$).

Conclusions

- The parents of toddlers with clear autistic behaviour considered their toddlers to have sleep difficulties more often than the parents whose toddlers have milder autistic behaviour although the differences in sleep variables were non-significant in this small sample.
- Descriptively compared to the general population differences in sleep patterns seemed to increase with age.
- These preliminary results suggest that a child's sleep needs to be supported even before a formal diagnosis of ASD.