

Prevalence and characteristics of sleep problems of Indonesian children in 0 – 36 months old

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ABSTRACT

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Background: A quarter of child population experiences sleep problems in their first three years of life. Inadequacy and problems of sleep for children may be caused by various causes that impact their mental health, emotional states, physical states, and immune systems. This also may culminate to behavioural problems.

Objective: The aim of this study is to identify the prevalence of sleep problems in 0–36 months old Indonesian children.

Methods: A cross-sectional study was conducted in Tulungagung, East Java, Indonesia. Children aged 0–36 months old were enrolled by using a quota sampling. Brief Infant Sleep Questionnaire (BISQ) was used in this study to assess the sleep problems. All obtained data were presented as a distribution and percentage of each variable referring to the BISQ indicators.

Results: A total of 493 children were enrolled in this study. This study found that there were 153 children (31%) who had experienced sleep problems, 79 children (16%) who had nocturnal sleep duration less than 9 hours, 62 children (12,8%) who had nocturnal waking more than 3 times, and 20 children (4%) who had duration of wakefulness during the night more than 1 hour respectively.

Conclusion: Although majority of parents thought that there were no sleeping problems with their children, the prevalence of sleep problems in 0–36 months old Indonesian children was quite high (31%), suggesting low parental awareness towards sleep problems of their children.

Latar Belakang: Sekitar seperempat populasi anak mengalami masalah tidur dalam tiga tahun pertama kehidupan mereka. Ketidakcukupan dan masalah tidur pada anak disebabkan oleh berbagai sebab yang berdampak pada kesehatan mental, emosi, fisik, dan sistem imunnya. Hal ini dapat berujung pada masalah perilaku.

Tujuan: Tujuan penelitian ini adalah untuk mengidentifikasi prevalensi gangguan tidur pada anak Indonesia usia 0–36 bulan.

Metode: Sebuah studi potong lintang dilakukan di Tulungagung, Jawa Timur, Indonesia. Anak-anak berusia 0–36 bulan diikutsertakan dengan menggunakan metode sampling kuota. Brief Infant Sleep Questionnaire (BISQ) digunakan dalam penelitian ini untuk menilai masalah tidur. Data disajikan sebagai distribusi dan persentase setiap variabel yang mengacu pada item BISQ.

Hasil: Sebanyak 493 anak terdaftar dalam penelitian ini. Prevalensi masalah tidur adalah sebesar 31%. Tercatat bahwa sebanyak 16% (79 anak) menunjukkan perilaku durasi tidur malam kurang dari 9 jam.

Gangguan tidur berupa jumlah bangun malam lebih dari 3 kali tercatat sebesar 12,8% (62 anak) dengan lamanya terjaga selama tidur malam lebih dari 1 jam adalah sebesar 4% (20 anak).

Kesimpulan: Meskipun mayoritas orang tua berpendapat bahwa tidak ada masalah tidur pada anaknya, namun prevalensi masalah tidur pada anak Indonesia usia 0–36 bulan cukup tinggi, hal ini dapat menunjukkan masih rendahnya kesadaran orang tua terhadap masalah tidur pada anak.

INTRODUCTION

Sleep is a physiological process and complex behaviour when a person reaches a reversibly released condition from surrounding environments and partially unresponsive towards external stimuli.¹ The physiology of sleep changes rapidly during foetal, infancy, and childhood. The sleep for infants or children is very fundamental for health manifestations.^{1,2}

It was suggested that about 20-30% of children may have sleep problems in their first 3 years of life, and it may relate to behavioural patterns at noon and familial/parental problems, including variety of children problems such mental states, emotional states, physical states, immune systems, weight problems, problems of cognitive functions, learning, attention and school performances.³⁻⁷ However, there is a gap between some research reports, real prevalence, and parental perception about sleep problems of children, indicating unmet diagnostic needs. For example, a report in USA showed that only 3.7% of paediatric patients were diagnosed with sleep problems.⁸ However, a study in India had shown that sleep problems were more common, up to 10.5% in toddlers.⁹ In addition, a recent study in Nepal showed higher prevalence up to 19.6%, while only 5.6% of the parents perceived that their children had sleep problems.¹⁰

Some sleep problems occurred in Asian countries were difficulty to fall asleep, having a fear of sleeping in the dark, sleep talking, restless sleep, teeth grinding during sleep, daytime sleepiness, later bedtimes, shorter

total sleep times, increased parental perception of sleep problems, and feeling more likely to room-share.¹¹⁻¹³ Therefore, screening for sleep problems is recommended to be parts of primary health care. The screening results can be used as a material for local medical workers to conduct counselling, so parents will more understand and be aware of their child sleep problems. Understanding the sleep problems, the parents are suggested to be able to prevent negative effects on the sleep problems.¹⁴ This study aims to investigate the prevalence and characteristics of sleep problems in 0–36 months old Indonesian children.

METHODS

This study was conducted in Tulungagung, East Java, Indonesia by using a cross-sectional design with a quota sampling technique. Its samples were derived from infants aged 0-36 months in several Tulungagung districts. The Brief Infant Sleep Questionnaire (BISQ), a validated instrument developed to assess child sleep problems, was used to assess the sleep problems.¹⁵ Questionnaires in this study were attained primarily by a retrospective method with the parents/caregivers recalling on sleep patterns, disturbances, or behaviours (e.g., sleeping arrangement, preferred body position during sleep, nocturnal sleep duration, daytime sleep duration, number of night waking, duration of wakefulness during the night hours (10 pm-6 am), settling time, method of falling asleep, nocturnal sleep-onset duration, parenteral consideration of sleep problems). Sleep problems were defined as a presence of one or more of the following conditions, such as nocturnal sleep duration with less than 9 hours, night waking with more than 3 times, and wakefulness duration with more than 1 hour.³

All obtained data then were presented as distribution and percentages of each variable referring to general population characteristics as well as the BISQ results. This study was approved by the Ethics Committee of Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia, with Ethical Clearance No. 54/EC/

KEPK/FKUA/2018.

RESULTS

493 children were included in this study, consisting of 248 females (50.3%) and 245 males (49.7%). The majority of children experienced normal nutritional status (87%). However, the BISQ results reported that there were 153 children (31%) with sleep problems despite the majority of the normal nutrition status (Table 1).

Sleep problems recorded by using BISQ were presented in Table 2. The obtained data found that most children (98.8%) slept together in parents' beds (bed sharing). A small percentage but nominally rather large number of children slept in a prone position (n = 44, 8.9%). Of all the children, only 5.5% were reported to have no night waking. Despite of this number, 94.7% parents perceived this as a normal phenomenon.

Table 1. Characteristics of children

| Characteristics | Frequency (n = 493) | Percentage (%) |
|------------------------|------------------------|-------------------|
| Gender | | |
| Male | 245 | 49.7 |
| Female | 248 | 50.3 |
| Age (months) | | |
| 0 – 3 | 32 | 6.5 |
| 4 – 11 | 130 | 26.4 |
| 12 – 24 | 195 | 39.6 |
| 25 – 36 | 136 | 27.6 |
| Sleep problems* | | |
| Yes | 153 | 31.0 |
| No | 340 | 69.0 |

*Based on BISQ conclusion

Table 2. BISQ results

| BISQ items | Frequency (n = 493) | Percentage (%) |
|---|------------------------|-------------------|
| Sleeping arrangement | | |
| Infant crib in a separate room | 3 | 0.6 |
| In parents' bed | 487 | 98.8 |
| Infant crib in parents' room | 2 | 0.4 |
| Infant crib in room with sibling | 1 | 0.2 |
| Preferred body position during sleep | | |
| Prone position | 44 | 8.9 |
| Side position | 242 | 49.1 |
| Supine position | 207 | 42.0 |
| Nocturnal sleep duration | | |
| < 9 hours | 79 | 16.0 |
| ≥ 9 hours | 414 | 84.0 |

| BISQ items | Frequency (n = 493) | Percentage (%) |
|--|------------------------|-------------------|
| Daytime sleep duration | | |
| < 9 hours | 487 | 98.8 |
| ≥ 9 hours | 6 | 1.2 |
| Numbers of night-waking | | |
| Never | 27 | 5.5 |
| ≤ 3 times | 403 | 81.7 |
| > 3 times | 63 | 12.8 |
| Duration of wakefulness during the night hours (10 pm-6 am) | | |
| >1 hour | 20 | 4.1 |
| 30 minutes – 1 hour | 31 | 6.3 |
| < 30 minutes | 442 | 89.7 |
| Settling time after awaking | | |
| >1 hour | 3 | 0.6 |
| 30 minutes – 1 hour | 183 | 37.1 |
| < 30 minutes | 307 | 62.3 |
| Methods of falling asleep | | |
| Being rocked | 69 | 14.0 |
| Being held | 201 | 40.8 |
| In bed alone | 59 | 12.0 |
| In bed near parent | 164 | 33.3 |
| Nocturnal sleep onset time | | |
| 6 – 7 pm | 196 | 39.8 |
| 7 – 8 pm | 160 | 32.5 |
| 8 – 9 pm | 144 | 23.1 |
| >9 pm | 23 | 4.7 |
| Parental perception of child sleep as a problem | | |
| Serious problem | 9 | 1.8 |
| Small problem | 17 | 3.4 |
| No problem | 467 | 94.7 |

DISCUSSION

This study found that there were 153 children (31%) who had experienced sleep problems, 79 children (16%) who had nocturnal sleep duration less than 9 hours, 62 children (12,8%) who had nocturnal waking more than 3 times, and 20 children (4%) who had duration of wakefulness during the night more than 1 hour respectively. Sleep problem is a collection of conditions characterized by a disturbance in an amount,

quality, or time of sleep in each individual as well as an emotional problems and other problems related with sleep disturbances.^{3,4,16} The sleep duration with less than nine hours is considered as a sleep problem, because the sleep duration is normally between 14 until 17 hours for newborns, between 12 until 15 hours for infants, and 11 until 14 hours for toddlers.¹⁴ Major factors that influence the duration of the night sleep are various, such as whether children sleep alone

or with their parents.⁴ In this study, there are 487 children (98.8%) who took naps less than nine hours. In new-borns, comparison on the number of the night's sleep and napping is almost similar. The napping duration is related to the baby's age. The older the infants, the smaller number of napping duration than the amount of nightsleep.¹⁷

There were 62 children (12.8%) who woke up five to six times a night because they slept near their parents for a breastfeeding purpose. The duration of waking up for a baby while sleeping at night is influenced by how parents treat their babies.^{3,5,7,16} Children who do not sleep with their parents in one place will have a shorter time to wake up. A lot of studies pointed out that sleeping in a bed with parents (bed sharing) could make the baby also at risk of being pinched and choking. If parents want to sleep with their babies, they can place them in separate beds but still in one room (co-sleeping).^{3,4}

This study showed that 20 children (4%) had waking duration more than 1 hour because of excessive interactions when the children were awake. Then 196 children (39.8%) started to sleep at 6:00-7:00 pm. Another research found that most children (25.2%) started to sleep at 8:00 pm. The time to start sleeping on the children are closely related to the duration when the child is getting asleep at night.^{3,4,13} The regular time of night sleep can be used by parents to organize the child's sleep time.¹⁷

The majority of child positions during sleep was sleeping on a side (49.1%). A recommended position for sleeping is in a supine position because it doesn't increase risks of choking or aspiration, especially for children less than one year. A sloping sleep is not recommended for children due to risks of being prone.¹⁴ In our study, there were 201 children (40.8%) who preferred to start sleeping when they were embraced or breastfed by their mothers. Similar results were also found in 56.1% children who were dominant to sleep when their mother was embracing and breastfeeding. This finding support an idea that parental intervention can affect a condition of a baby when starting sleeping.⁷

The majority (94.7%) of parental consideration of sleep problems represented that there were no problems with their child sleep conditions. The only parents' complaints for their child sleep problems were when their children got sick. Therefore, parents need to understand how to manage good sleep for their children, so they will understand their child sleep conditions.

CONCLUSION

The prevalence of sleep problems of Indonesian children in 0–36 months old was quite high (31%), and the majority of the parents thought that there were no sleep problems with their children. The large gap between the sleep problem prevalence and the parental perception suggests that parents awareness of child sleep problems in Indonesia is still low.

CONFLICT OF INTEREST

All authors declared that there was no conflict of interest in this study

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