Sleep Medicine 14 (2013) 1283–1289

Contents lists available at ScienceDirect

Sleep Medicine

journal homepage: www.elsevier.com/locate/sleep

Original Article

Cross-cultural differences in the sleep of preschool children

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ARTICLE INFO

Article history:
Received 4 March 2013
Received in revised form 2 September 2013
Accepted 3 September 2013
Available online 21 September 2013

Keywords:
Sleep
Preschool
Cross-cultural
Child
Sleep patterns
Sleep problems

ABSTRACT

Background: The aim of our study was to characterize cross-cultural sleep patterns and sleep problems in a large sample of preschool children ages 3–6 years in multiple predominantly Asian (P-A) and predominantly Caucasian (P-C) countries/regions.
Methods: Parents of 2590 preschool-aged children (P-A countries/regions: China, Hong Kong, India, Japan, Korea, Malaysia, Philippines, Singapore, Thailand; P-C countries: Australia-New Zealand, Canada, United Kingdom, United States) completed an Internet-based expanded version of the Brief Child Sleep Questionnaire (BCSQ).
Results: Overall, children from P-A countries had significantly later bedtimes, shorter nighttime sleep, and increased parental perception of sleep problems compared with those from P-C countries. Bedtimes varied from as early as 7:43 pm in Australia and New Zealand to as late as 10:26 pm in India, a span of almost 3 h. There also were significant differences in daytime sleep with the majority of children in P-A countries continuing to nap, resulting in no differences in 24-h total sleep times (TST) across culture and minimal differences across specific countries. Bed sharing and room sharing are common in P-A countries, with no change across the preschool years. There also were a significant percentage of parents who perceived that their child had a sleep problem (15% in Korea to 44% in China).
Conclusions: Overall, our results indicate significant cross-cultural differences in sleep patterns, sleeping arrangements, and parent-reported sleep problems in preschool-aged children. Further studies are needed to understand the underlying bases for these differences and especially for contributors to parents' perceptions of sleep problems.

1. Introduction

Research on sleep in young children has primarily focused on the first 3 years of life, especially as this is a period of rapid changes [1]. In addition, sleep problems often are a major concern for parents and professionals, especially in the first 3 years [2,3], but studies indicate that parents continue to have considerable concerns about their child's sleep past this initial period. For example, a study in China of young children ages 4–6 years found that 39% had difficulties initiating sleep and that almost 30% experienced fatigue [4]. Furthermore, we know that sleep is determined by both biologic and cultural determinants, and it is the interaction between these 2 factors that affect the establishment of behavioral and developmental norms [5]. Thus sleep expectations and perceptions of sleep problems by both parents and healthcare providers are influenced by cultural norms.

To our knowledge, there have been no cross-cultural studies conducted on sleep patterns or sleep problems in preschool-aged children to date [6,7]. Studies that have been conducted in this age group are country-specific, including studies in the United States [8], Singapore [9], Japan [10], and Taiwan [11], which do not enable cross-cultural comparisons. However, we found significant cross-cultural differences in a previous study of sleep patterns and sleep problems in infants and toddlers [12]. In this study of almost 30,000 young children (birth to age 3 years), children from predominantly Asian (P-A) countries/regions had significantly later bedtimes, shorter total sleep times (TST), and increased parental perception of sleep problems than children from predominantly Caucasian (P-C) countries/regions [12]. We also found that parents from P-A countries were significantly more likely to identify a sleep problem in their children (26% vs 52% overall) compared to parents from P-C countries [13]. Finally, whereas infant sleep variables were strong predictors of parental perception of sleep problems in P-C countries, they were significantly less predictive in P-A countries where demographic variables were more likely to play a role.

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http://dx.doi.org/10.1016/j.sleep.2013.09.002

As noted above, it is difficult to compare the results from country-specific studies, as they typically have utilized different age groups, included different questions, and used varied definitions of sleep problems. These differences in methodologies and definitions make it difficult to make conclusions about how sleep varies across countries and cultures and to determine if there are differences in parent-perceived sleep problems. Furthermore, compared to the limited data available on sleep in infants and toddlers, there is even less information on sleep in preschool-aged children, with lack of any data from most countries/regions in the world. As a start to collecting normative data on preschoolers and to begin to identify predictors of parent-perceived sleep problems, our study focused on P-C and P-A countries/regions in North America, the United Kingdom, and Asia–Pacific.

Thus the primary objectives of our study were to (1) characterize sleep patterns, sleep behaviors, and sleep problems in a large sample of preschool-aged children ages 3–6 years in multiple P-A and P-C countries/regions; (2) assess parental perceptions of sleep problems in these young children; and (3) evaluate predictors of parental perceptions of sleep problems in this age group.

2. Methods

2.1. Participants

Mothers of 2590 preschool-aged children (Australia and New Zealand [$n = 286$], Canada [$n = 272$], China [$n = 248$], Hong Kong [$n = 82$], India [$n = 294$], Japan [$n = 148$], South Korea [$n = 312$], Malaysia [$n = 121$], Philippines [$n = 76$], Singapore [$n = 81$], Thailand [$n = 88$], United Kingdom [$n = 298$], and United States [$n = 284$]) participated in our study. Countries or regions were grouped as either P-C ($n = 1139$; Australia, Canada, New Zealand, United Kingdom, and United States) or P-A ($n = 1447$; China, Hong Kong, India, Indonesia, Japan, Korea, Singapore, Malaysia, Philippines, Taiwan, Thailand, and Vietnam). Children's ages ranged from 3 to 6 years, evenly distributed across boys and girls. Data collection in each country/region was terminated when the target sample size was fulfilled.

2.2. Procedure

All participants completed the Brief Child Sleep Questionnaire (BCSQ). The BCSQ is based on the Brief Infant Sleep Questionnaire [11,14]. The questionnaire included specific questions about daytime and nighttime sleep patterns, as well as sleep-related behaviors. Additional age-appropriate questions were added, including sleep-related factors (e.g., daytime sleepiness, sleep terrors), daily screen time (i.e., television viewing, using a computer, playing other electronic games), and daily time spent outdoors. As with the original Brief Infant Sleep Questionnaire, the major sleep variables derived from the BCSQ have been compared to actigraphy with reasonable validity for sleep schedule measures (sleep-onset time, sleep duration) and lower validity for sleep quality variables such as number of night wakings, which often go unnoticed by parents in this age group [15]. The respondents were asked to describe their child's behavior during the last 2 weeks. The questionnaire was translated into each language and back-translated to check for accuracy. All data were collected online. In almost all countries/regions (Australia, China, India, Malaysia, Singapore, Philippines, United Kingdom, and United States), the questionnaire was set as a pop-up screen at a popular parenting Web site (BabyCenter) and invited mothers to complete a sleep survey. In 2 countries (Japan and Korea), recruitment was conducted via e-mail utilizing mailing lists obtained from local marketing firms and online advertising at other parenting sites. Completion of the questionnaire was voluntary and there were no exclusionary criteria. The study was approved by a university-based Institutional Review Board. No identifying information was collected. A few areas offered incentives for completion (e.g., free samples or gift vouchers) and participants were asked to provide their e-mail addresses at the end of the survey if they were interested. The complete sample was collected between February 2011 and March 2012.

In addition to the BCSQ, demographic information was collected, including maternal age, maternal education, and employment status. For quality control, responses were limited to avoid inappropriate or extreme data (e.g., sleep-onset before bedtime, total nighttime sleep of <5 h or >14 h).

2.3. Statistical analyses

Means and frequencies were used for demographic information. Analyses of covariance were used to compare sleep variables across countries, with effect sizes (ES) (partial η^2) reported for all comparisons. A priori analyses of covariance, covarying for sex, maternal age, maternal education, and employment status were then conducted to compare countries that were P-C to P-A. Analyses

Table 1
Participant demographics.

	Total %	Total *n*	P-C %	P-A %	χ^2	Effect size φ
Sex					0.04	.00
Boy	50.0	1293	49.8	50.2		
Girl	50.0	1293	50.2	49.8		
Employment status						
Full time	37.6	972	27.7	45.4	131.06**	.23
Part time	14.3	371	21.6	8.6		
Home/student	48.1	1243	50.7	46.0		
Education					14.92	.08
Elementary school	0.5	12	0.4	0.5		
High school	36.7	949	37.5	36.2		
College	44.8	1159	43.0	46.2		
Postgraduate	18.0	466	19.1	17.1		
Age of respondent, y					119.88**	.22
<25	2.9	74	4.0	2.0		
25–29	17.8	461	14.3	20.6		
30–34	39.2	1014	32.7	44.4		
35–39	29.9	773	33.0	27.4		
⩾40	10.2	264	16.1	5.6		

Abbreviations: P-C, predominantly Caucasian; P-A, predominantly Asian; y, year.
*$P < .001$.
** $P < .0001$.