Original Article

"My child has a sleep problem": A cross-cultural comparison of parental definitions

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ARTICLE INFO

ABSTRACT

Background: Sleep problems are highly prevalent in early childhood. In many cases, parents seek professional help when they suspect their child suffers from a sleep problem. The aim of this study was to explore sleep, demographic and cultural factors associated with parental definition of child sleep problem in a large-scale, cross cultural study.
Methods: Parents (or caregivers) of 29,287 infants and toddlers (aged 0–3 years) from 17 countries completed a questionnaire on their child's sleep patterns, sleep setting, and demographic variables.
Results: The results indicated that, in comparison to parents from predominantly Caucasian (PC) countries, parents from predominantly Asian (PA) countries were significantly more likely to identify a sleep problem in their children (26% vs 52% overall; 2% vs 17% "severe" sleep problem). Furthermore, whereas infant sleep variables were strong predictors of a sleep problem definition in PC countries, they were significantly less predictive in PA countries where demographic variables played a significant role.
Conclusions: These results highlight the need to further explore the role of demographic and cultural variables in determining parental perception of a sleep problem, a perception that relates to help seeking professional treatment for infant sleep problems. Our findings also emphasize the need to educate parents about infant and toddler sleep and to provide parents information and screening tools to help them identify sleep problems in a more evidence-based approach.

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1. Introduction

Sleep problems are a source of major concern to parents and professionals. It has been estimated that between 20% and 30% of children experience sleep problems during the first 3 years of life [1–8]. These problems appear to be persistent [5,9–11] and are associated with daytime behavior problems [6,9–11] and parental distress [5,6,10,11].

Studies have repeatedly shown that brief clinical interventions for sleep problems are highly effective during infancy and toddlerhood [8,12–14]. Seeking professional help is usually based on parental beliefs that their child has a sleep problem. Such a belief may be based on a realistic perception of the child's sleep characteristics. But it also may be influenced by unrealistic expectations, lack of developmental knowledge, and by broader cultural norms, beliefs, and attitudes that shape parental expectations.

Recent studies have demonstrated individual differences in parental perceptions, attitudes and interpretation vis-à-vis infant sleep [15–19]. For instance, it has been shown that when parents are asked to read vignettes describing infants with sleep problems and rate their agreement with statements reflecting different interpretations on how to address these problems, parental cognitions vary significantly between parents of sleep-disturbed infants and controls, as well as between fathers and mothers [15,16]. Furthermore, it has been demonstrated that early parental sleep-related cognitions predict parenting behaviors regarding sleep and the development of infant sleep consolidation [16]. Finally, in a study comparing sleep-related cognitions of parents raised in a communal sleeping arrangement in the Kibbutz with parents raised in home-based family sleeping arrangements, the early-life cultural context of the parents predicted their adult parental cognitions regarding infant sleep [17].

These studies suggest that parental cognitions and perceptions regarding infant and toddler sleep are shaped by their cultural context, their own childhood narratives, and by their actual experience with their own child. Our recent work has demonstrated significant variations in sleep patterns, parental behaviors, and sleep context across countries and cultures [20,21]. For example, we have found that infants and toddlers (ages 0–3 years) in predominantly-Asian (PA) countries/regions are more likely to have a later bedtime, sleep less, and have more reported sleep difficulties in comparison to children in predominantly-Caucasian (PC) countries

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[21]. Furthermore, infants and children in PA countries are more likely to sleep in their parents' bed or room. Finally, parental sleep-related behaviors are more predictive of infant sleep in PC countries than in PA countries [20].

The main purpose of the present study was to examine factors underlying parental perception of a sleep problem in their child in different cultures, using data collected in a large cross-cultural study of sleep during the first 3 years of life. Because of absence of prior published data on this topic, the nature of the study was exploratory with no a priori hypotheses.

2. Method

2.1. Participants

Parents (or caregivers) of 29,287 infants and toddlers (aged 0–3 years) participated in this study. The participants were from 17 countries including Australia (N = 1073), Canada (501), China (7505), Hong Kong (1049), India (3982), Indonesia (967), South Korea (1036), Japan (872), Malaysia (997), New Zealand (1081), Philippines (1034), Singapore (1001), Taiwan (896), Thailand (988), United States (4505), United Kingdom (800) and Vietnam (1000). The sample contained almost equal boys and girls (an average of 48.1% boys). Additional sample characteristics are described in previous publications [20,21].

2.2. Procedure

This study has been approved by the internal review board of Saint Joseph's University. All participants completed an expanded version of the Brief Infant Sleep Questionnaire (BISQ) [4]. The BISQ has been validated against actigraphy and sleep diaries and has demonstrated good psychometric properties [4]. The expanded version of this well validated tool includes specific questions about infant daytime and nighttime sleep patterns, as well as sleep-related behaviors [22]. Sleeping arrangements (bed-sharing and room-sharing) and bedtime routines are also assessed. The respondents are asked to describe their child's sleep patterns during the last two weeks. In addition to the expanded BISQ, demographic information was collected, including parental age, education, employment status, and child's birth order. Translation and back-translation procedures were employed to insure appropriate translation into each respective language. The questionnaires were completed online on parenting websites in most countries with the exception of Thailand and Vietnam where a paper-based questionnaire was completed individually. See previous reports for additional information on the procedures [20,21].

2.3. Statistical analyses

χ^2 analysis was performed to compare cultural differences in frequencies of defined sleep problems. Culture was defined as a dichotomous variable distinguishing between predominantly-Asian countries/regions (PA; China, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Philippines, Taiwan, Thailand, Vietnam) and predominantly-Caucasian countries (PC; Australia, Canada, New Zealand, United Kingdom, United States). Logistic regressions were used to assess factors explaining these definitions with Wald χ^2. Receiver operating characteristic (ROC) curves were plotted to compare predictions in predominantly-Asian countries/regions and predominantly-Caucasian countries. Spearman correlations were used to compare the associations between predictors and parental definition of sleep problem. Because of the nature of the online test administration there was no option to skip most of the questions with the exception of some demographic questions

(i.e., race, level of education). Missing data on these measures did not exceed 1.7% of the participants. These participants were excluded in some analyses (logistic regressions) that processed demographic variables.

3. Results

3.1. Cross-cultural differences in parentally-defined sleep problems

χ^2 analysis revealed significant cultural differences in the frequency of parentally-defined sleep problems (χ^2 = 1900; p < .0001). In PA countries, 17.33% of the parents reported that their children experience a severe sleep problem and an additional 34.57% reported a small sleep problem (total = 51.90%); whereas in PC countries the equivalent rates were 2.15% and 24.15%, respectively (total = 26.3%). These cultural differences are clearly manifested in Fig. 1. Furthermore, Fig. 1 also shows the significant variability in the prevalence of parentally indicated sleep problems that exist within the PA countries as opposed to the PC countries.

3.2. Factors explaining parental definitions of sleep problems

Logistic regression analysis (Logistics procedure, SAS Ver. 9.2) was used to assess the predictors of parental definition of sleep problems. Logistic regression analysis enables testing both categorical and continuous variables as predictors and allows for testing interactions between predictors. The outcome variable was defined as parental definition of a "severe sleep problem" as opposed to "small problem" or "no problem." The potential predictors included: (a) reported sleep measures (bedtime, number of night-wakings, total sleep time, nocturnal wakefulness time, longest sleep episode, and sleep latency); (b) parental characteristics (culture, age, education, employment); (c) child characteristics (age, sex, birth order: only child vs others); and (d) sleep setting (parent in the room at sleep onset, in parents' bed, in separate room). The results are summarized in Table 1.

Inspection of Table 1 reveals that the best predictor of "severe sleep problem" is the number of night wakings. This was true for the entire sample as well as in each culture (PA and PC countries). The next best predictor was the culture: parents in PA countries are 6.5 times more likely to define their child's sleep as a severe sleep problem. Other sleep variables that were found to be predictive included extended sleep latency, earlier bedtime, longer consolidated sleep episode, extended wake time during the night, and shorter total sleep time. Predictive parental variables in addition to culture included lower education level, higher employment level and younger age. When children were the only child in their family their sleep was less likely to be defined as a severe sleep problem. Finally, when parents were not present in the room when their child fell asleep they were less likely to endorse the severe sleep problem definition.

The receiver operating characteristic (ROC) curves (Fig. 2) show that the variables used to predict parental definition of severe sleep problem are significantly more predictive in the PC countries (area under the curve = .884) than in the PA countries (area under the curve = .718) (z score for comparison between the areas under the curves = 17.29, p < .0001).

To further explore the distinct prediction pattern in each culture we entered the interaction terms between each variable and culture as potential predictors to the logistic regression. The following 3 interactions were found to be significant predictors of parental definition of a severe sleep problem: (a) culture ∗ longest sleep episode (Wald χ^2 = 92.95; p < .0001); (b) culture ∗ parent's age (Wald χ^2 = 48.91; p < .0001); and (c) culture ∗ total sleep time (Wald χ^2 = 27.40; p < .0001). Examination of these interactions re-
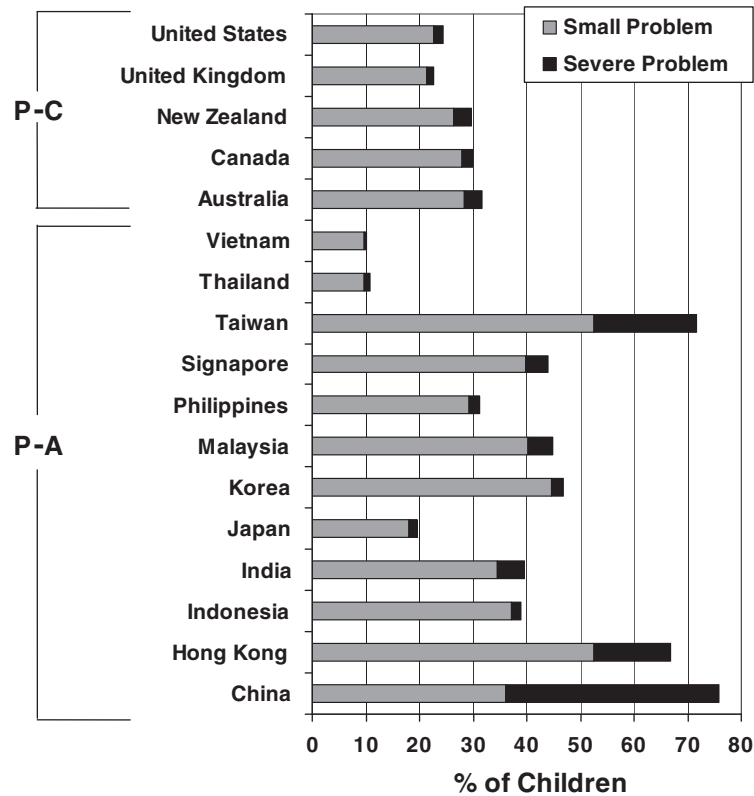
Fig. 1. Percent of children defined as having a small and severe sleep problem in each country.

Table 1
Stepwise logistic regression analysis of predictors of parental definition of "severe sleep problem".[*] Presented statistics are for the entire sample and check marks in the P-A and P-C refer to significant effects in separate analyses in each culture.

Step	Variable name	Wald χ^2	Odds ratio	95% limits	P-A	P-C
1	No. of night wakings	582.48	1.46	1.41–1.50	✔	✔
2	Culture (PA vs PC)	420.74	6.50	5.44–7.78	–	–
3	Sleep latency	285.21	1.42	1.36–1.48	✔	✔
4	Parent's education	208.59	0.74	0.73–0.77	✔	n.s.
5	Parent's employment[a]	153.17	0.77	0.73–0.80	✔	n.s.
6	Only child	71.56	0.72	0.67–0.78	✔	n.s.
7	Bedtime	88.81	0.86	0.83–0.89	✔	n.s.
8	Longest sleep episode (h)	67.88	1.06	1.05–1.08	✔	✔
9	Parent's age	70.69	0.83	0.79–0.87	✔	n.s.
10	Total sleep time	32.42	0.95	0.93–0.96	✔	✔
11	Nocturnal wakefulness	54.32	1.18	1.13–1.24	✔	n.s.
12	Parent in the room ("no")[b]	15.38	0.48	0.34–0.69	n.s.	n.s.
13	Child's age	n.s.			n.s.	✔

Parental measures refer only to the parent who completed the questionnaire.
[*] All *p* values (including those related to the check marks) are smaller than .0001.
[a] Employment – higher score represents lower employment.
[b] Parent in the room – the odds ratio refers to parent not in the room while the child is falling asleep.

veals that sleep measures were stronger predictors of parental definitions of severe sleep problems in the PC countries than in the PA countries.

To further explore these cultural differences in prediction of parental definition of sleep problems we calculated simple Spearman correlations between the different predictors and parental definition of a sleep problem. These correlations are presented in Fig. 3. Fisher *r* to *z* transformations were used to test for significant differences between correlations.

Correlation patterns significantly differed between PA and PC countries. Significantly stronger correlations were found between parental definition of sleep problem and reported sleep measures in the PC countries in comparison to the PA countries, whereas the opposite was true for the correlations between parental definition of sleep problems and demographic characteristics.

4. Discussion

Our study explored, in depth, the cross-cultural difference in parental perception of a sleep problem in their child. Significant cultural differences were found in the prevalence of sleep problems reported by parents of infants and young children. Parents from predominantly-Asian countries/regions were more likely to characterize their child's sleep as a problem, especially a severe problem, in comparison to parents from predominantly-Caucasian countries/regions (17% vs 2%, respectively, for severe problem). These findings are in line with our previous findings demonstrating poorer reported sleep quality in young children from PA countries in comparison to PC countries [20,21]. Noteworthy are also the striking differences in perception of sleep problems between different PA countries which suggest cultural or contextual effects on parental perceptions.

The examination of factors underlying parental definition of sleep problems revealed an interesting picture. In PC countries, reported sleep measures were the best predictors for sleep problem definition. The sleep variables that were most predictive were night wakings, followed by sleep onset latency. In PA countries, however, reported sleep measures were significantly less predictive of parental definition of a sleep problem. In contrast, demographic variables such as the child's age, parent's age, and parent's education level were more predictive of parental definition of a sleep problem in PA countries than in PC countries, suggesting that cultural factors and social expectations may play a
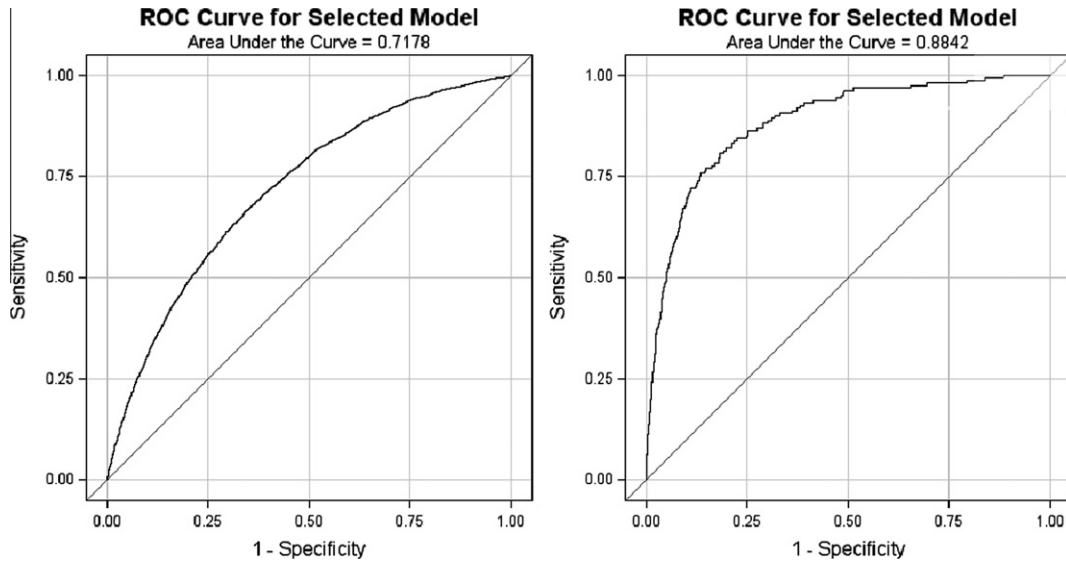
Fig. 2. Receiver operating characteristics curves for defining a severe sleep problem based on sleep and demographic characteristics in predominantly Asian (left panel) and predominantly Caucasian (right panel) countries.
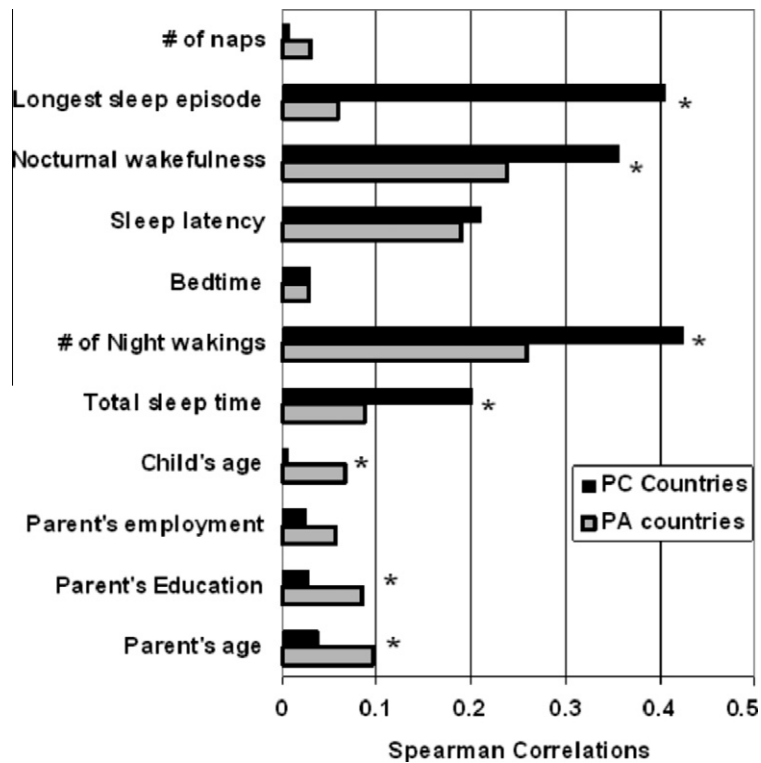
Fig. 3. Spearman correlations between predictors and parental definition of a sleep problem. *Significant difference between correlations in PA and PC countries, Fisher r to Z test, p < .0001

more important role in the identification of a sleep problem by parents in PA countries.

Unfortunately, the data from our study do not allow us to delve deeper into the underlying contextual issues that influence parental perceptions of a sleep problem in addition to the sleep characteristics that are expected to determine parental perception. Nevertheless, our findings provide strong indication for the important role of such contextual variables. Existing literature on the topic of culture and sleep suggests that culture plays an important role in determining parental practices and expectations vis-à-vis

children's sleep [23], but specific evidenced-based explanations for the present findings could not be drawn from previous studies.

Parental perception of a sleep problem is only the first step in pursuing and receiving proper professional or informal help. Seeking professional help requires additional crucial steps such as having proper help-seeking strategies, available services and resources, overcoming stigma and shame and other emotional and sometimes financial hurdles that may hinder the process. All these variables have also been shown to be influenced by social, cultural, and other contextual factors [24–27].

The limitations of this study should not be overlooked. This study is mostly based on online administration, which may have biased the sample in different culture-specific ways, such as parents who perceive their child to have a sleep problem being more likely to complete the survey. Furthermore, because of the anonymity of the survey, no measures were taken against possible duplicate administrations which may bias the sample. However, our results are consistent with other country-based reports of sleep issues in young children (see [20,21] for detailed comparisons). Another limitation is that our results are based on subjective parental report, and thus future studies should include more objective measures of sleep, such as actigraphy. In addition, two countries (Thailand and Vietnam) were sampled by pen and paper questionnaires and produced somewhat distinct results, which may have also biased the results, although these countries reported the lowest levels of parent-reported sleep problems, which may have actually led to underestimation of sleep problems in PA countries/regions. Finally, this study utilized the BISQ, which has only been validated in English-speaking individuals. Further research is needed to validate and standardize this questionnaire in each country to overcome potential cross-cultural differences in interpretation of the questions.

Overall, having accessible standardized online screening tools to assess common developmental or health problems may help parents in determining if they should suspect that their child has a significant clinical problem and overcome contextual biases and misperceptions. Similar tools can help pediatricians and other child-care professionals in screening for infant sleep problems even when parents refrain from complaining or to correct misperceptions when parents report problems because of inappropriate expectations. The development of such an accessible cross-cultural screening tool for infants and toddlers is an important step in this direction [4,21,22].

Conflict of Interest

Acknowledgment

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