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Original Article

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

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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.

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 ($\chi^2 = 1900$; $p < .0001$). 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 $\chi^2 = 92.95$; $p < .0001$); (b) culture $*$ parent's age (Wald $\chi^2 = 48.91$; $p < .0001$); and (c) culture $*$ total sleep time (Wald $\chi^2 = 27.40$; $p < .0001$). Examination of these interactions re-