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Epidemiology of co-sleeping and nighttime waking at 12 months in a birth cohort

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Abstract

Objective: To investigate the prevalence and factors associated with co-sleeping and nighttime waking among the children of the Pelotas 2004 cohort at 12 months of age.

Methods: All children born in the city of Pelotas, RS, Brazil during 2004 were enrolled on a longitudinal study. Mothers were interviewed at delivery and once more at 12 months of age to obtain information on their sociodemographic and reproductive characteristics and on their children's sleep and the environment in which their children sleep. Co-sleeping was defined as habitually sharing the bed with another person. Multivariate analysis was performed using Poisson regression.

Results: The prevalence of co-sleeping at 12 months was 45.8% (95%CI 44.2-47.3). Co-sleeping was more common among mothers with low socioeconomic status, less education, younger mothers, mothers with more previous births and among children who wake at night. The prevalence of nighttime waking was 46.1% (95%CI 44.6-47.7). Nighttime waking was more common among boys and among the offspring of mothers who had had a greater number of previous pregnancies and of mothers who had been employed while pregnant.

Conclusion: Co-sleeping and nighttime waking are common among this study population, indicating a need to continue follow-up in order to observe how long these habits persist through childhood and to investigate their consequences for child development and behavior.

J Pediatr (Rio J). 2008;84(2):114-122: Sleep, disorders, sleep disorders, child, childhood, waking.

Introduction

During childhood, adequate sleep is important for growth and for emotional and behavioral development, and also for acquisition of the cognitive functions learning and attention.[1,2] Cerebral development, together with neuroplasticity, takes place during the first years of life, and the length of time spent asleep is an important factor during this stage. During the first year of life a process of maturation takes place by which the fragmented sleep pattern of the first months becomes continuous during the night.[3,4] There are reports that sleep-related problems are common among children, with prevalence rates varying from 20 to 30% and being influenced by biological, psychological, cultural, social and family factors.[5] The most prevalent manifestations of sleep disorders in childhood are multiple or prolonged periods awake during the night,[6,7] bedtime resistance[8] and co-sleeping. These problems can also affect family relationships, altering the parents' sleeping habits and leading to stress and other conditions related to sleep deprivation.[9,10]

Co-sleeping has been the subject of research for many years, and there are descriptions of both positive and negative effects on children's physical, psychosocial and emotional development.[11] Its true prevalence is difficult to determine, due to variations between cultures and the different periods of time studied. In a range of studies the prevalence rates of co-sleeping vary from 6 to 70% during the first

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4 years of life.[8,11] Co-sleeping is a common practice among societies from non-Western cultures,[12] and its advantages or risks are perceived in accordance with the values of a given society.[13] Climatic factors, the size of families, the availability of space in the home and cultural values (whether independence and individuality or family interdependence are prioritized) have been described as being determinants of co-sleeping in industrialized societies.[14]

Nighttime waking generally causes greater concern among parents since it interferes with the family routine, especially if multiple episodes occur during a single night.[8] The majority of studies that have investigated the prevalence of co-sleeping and nighttime waking were carried out in developed countries and information on the epidemiology of these characteristics of sleep in developing countries is scarce.

The objective of this study was to investigate the prevalence and factors associated with co-sleeping and nighttime waking among the children in the Pelotas 2004 cohort, in the South of Brazil, as they reach 12 months of age.

Methods

The methodology employed to enroll the cohort of all births in Pelotas in 2004 can be found in an earlier publication.[15] Briefly, all babies born between the 1st of January, 2004 and the 31st of December, 2004 to mothers resident in Pelotas or Jardim América (a neighborhood that is contiguous with the city of Pelotas), at any of the city's five hospitals with maternity units were enrolled in the cohort. To date, in addition to the perinatal investigations carried out at the hospitals, these children have been visited at home at 3, 12 and 24 months of age. The information used in this study was collected at the hospitals perinatally and at the 12-month visits.

The perinatal survey included a questionnaire asking mothers about the socioeconomic conditions of their families, paid maternal employment during pregnancy, educational level, age, parity and type of delivery. Socioeconomic status was defined according to the National Association of Market Research Companies (ANEP - Associação Nacional de Empresas de Pesquisa),[16] which classifies families in descending order, from A to E according to their possessions and the educational level of the head of the family. Due to the small number of families classified as on the extremities of this scale, the classes were regrouped into three categories: A/B, C and D/E. Paid maternal employment was categorized as present or absent. The mothers' educational level was measured in the number of academic years in which they had passed the end of year examinations. Maternal age was recorded in full years on the date of delivery. Type of delivery was classified as either normal (vaginal) or caesarian.

The following information on the infants was also recorded: sex, weight, gestational age and neonatal intercurrent conditions. All newborn infants were weighed using a digital balance (accurate to 100 g) and their gestational ages estimated according to the Dubowitz scale.[17] Infants were defined as premature if they had been born before completing their 37th week of gestation. Intercurrent neonatal conditions reported by the mother (admission to a neonatal intensive or semi-intensive care unit) were recorded. Children born weighing less than 2,500 g were defined as low birth weight infants.

At the 12-month home visit mothers were interviewed about their children's habitual sleep patterns and about the characteristics of their sleep during the previous two weeks. The place where the child was sleeping was investigated and the mother was asked whether the child shared a bed with adults or other children; how long the child spent asleep each night; whether there were any problems with going to sleep; whether the child wakes at night; whether the child feeds at night; what time the child normally goes to sleep and wakes up; what her (the mother's) own perception of her child's sleep was and whether the child's sleep patterns negatively affect her wellbeing; and also who usually looks after her child at bedtime and when waking up. Co-sleeping was defined as habitual sharing of a bed with any other person (adult or child), during part or all of the night. Nighttime waking was surveyed using the question, "Does the child wake up in the middle of the night?". The sleep pattern during the previous 2 weeks was investigated in terms of the number of naps during the day and the frequency of waking up during the night.

Statistical analysis was carried out using Stata 9.0 (Stata Corp., College Station, TX, United States, 2005). Chi-square tests were used to compare prevalence rates by dichotomous exposures and chi-square tests for linear tendencies were used to compare ordinal exposures. The strength of associations between exposures and outcomes (co-sleeping and nighttime waking) were evaluated using the ratios of their prevalence rates, by Poisson regression, since they were very frequent. Multivariate analyses followed a hierarchical model, according to a theoretical causality reference constructed by the authors. In this model maternal and a parity were on the first, highest, level of co-sleeping or nighttime waking determinants, followed by the socioeconomic variables on the second level (socioeconomic status, maternal educational level and paid maternal employment during pregnancy) and, lowest, by the variables relating to the child. Both outcomes were analyzed on the same level and then adjusted for each other.

This study was approved by the Research Ethics Commission at the Medical Faculty of the Universidade Federal de Pelotas. Mothers gave signed consent.

Results

A total of 4,231 live births were included in the perinatal survey (0.8% of losses and refusals). At the 12-month visit, the mothers of 3,907 children were interviewed (6.1% of losses and refusals). Twins and multiples were excluded from this analysis.

In Table 1 it can be observed that around 50% of the mothers were in the 20-29 age group and 18.6% were adolescents. The mother's mean educational level was 8.2±3.5 years, with 41% having had 5-8 years of formal education. Around 40% were primaparous, 47.6% were in social classes D/E and 39.4% had worked while pregnant.

In this sample of newborn infants, 51.8% were male; 14.1% were preterm; 8.3% had low birth weight; 45.2% were delivered by caesarian; and 11.3% had suffered neonatal intercurrent conditions (Table 1).

The prevalence of habitual co-sleeping was 45.8% (95%CI 44.2-47.3), and the prevalence of nighttime waking was 46.1% (95%CI 44.6-47.7). Just 6.1% of the children slept alone in a separate bedroom, and 48.1% did not share their bed with anyone else, but did share a bedroom. The majority (60.8%) of babies that exhibited co-sleeping shared a bed with both their parents (Table 2) and 89.9% shared a bed all night long. Generally it was the mothers who put their children to bed (77.7%) and also who attended to nighttime waking (87.1%). One third of the mothers (33.6%) felt their children took too long to go to sleep. More than half of the children (59%) were fed during the night, the majority on breastmilk. Just 16.1% of the mothers reported that their child's quality of sleep interfered with their wellbeing.

During the 2 previous weeks the children had slept a mean of 10±1.6 hours per night (data not shown); 64.4% had woken during the middle of the night, with 56.5% of these having woken every night and, generally twice or more the same night. According to the mothers, the majority of times it was diseases of the child that affected sleep (53.9%). Teething was the second most coming cause given by mothers for nighttime waking (12.2%). Practically all of the children napped during the day (99%), with 62.4% sleeping twice or more per day, sleeping a mean of 79.6±45.4 minutes (data not shown). The sleep of 21.8% of the children was classed as regular or bad by their mothers.

Comparing the sleep of children who co-slept with that of those who did not, no differences were observed in terms of problems going to sleep or frequency of nighttime waking, either habitually or during the previous 2 weeks. However, more children who co-slept woke up every night (38.6 *vs.* 34.6%) and they woke up a greater number of times per night than those who did not co-sleep (mean of 2.1±1.4 times *vs.* 1.9±1.2). Waking at night to suckle was twice as frequent in the co-sleeping group (41.8 and 21.1%, data not shown).

Also in Table 1, one can observe the prevalence rates of co-sleeping and nighttime waking, by the characteristics of the mothers and their children. Co-sleeping was more common among the poorer mothers. There was an inverse relationship with maternal educational level, being more than three times more frequent among the children of mothers with up to 4 years' schooling (64.7%), compared with mothers with 12 years or more of formal education (18.7%). An inverse association was also observed with maternal age: 58.1% of the adolescents mothers reported co-sleeping, compared with 42.1% aged 40 or older. The association with parity was positive, with mothers who had given birth four times or more reporting co-sleeping more often (59.7%), when compared with the primaparous mothers (41%). Mothers who had been employed while pregnant reported co-sleeping less frequently than those who had not worked (30.4 and 49.9%, respectively). Co-sleeping was more frequent among children delivered normally.

Nighttime waking was more common among boys. An inverse association was observed with maternal educational level (53.5% among children of mothers with less education *vs.* 44.9% among those with 12 years' schooling or more) and there was a positive relationship with parity (49.9% among those with four or more previous deliveries *vs.* 43.6% among primaparous mothers). Nighttime waking was reported more frequently by mothers who had not worked while pregnant.

Table 3 lists the results of the raw and adjusted analyses, with co-sleeping as the outcome. The multivariate analysis indicated that maternal educational level, age and parity, socioeconomic status and nighttime waking were independently associated with the prevalence of co-sleeping. The probability of co-sleeping increased with parity and was inversely related to socioeconomic status and maternal age and educational level. Nighttime waking had an association with co-sleeping, protecting by 8%.

Table 4 lists the results of the raw and adjusted analyses with nighttime waking as outcome. In the multivariate analysis, there were statistically significant associations with parity, maternal employment and sex of child. The association with parity was positive. The probability of nighttime waking was 8% less among children whose mothers who had worked while pregnant. Girls were 10% less likely to wake than boys.

Discussion

The prevalence of habitual co-sleeping observed in this study was high, being associated with poorer economic levels, lower educational level and maternal age and higher parity. A similar prevalence rate was described after observation of another cohort in the same state in Brazil (Rio Grande do Sul) in the city of Passo Fundo.[18] In the Passo Fundo study, the parents' bedroom was where 97% of slept for their first 3 months of life. There 44.3% were co-sleeping and the remainder had their own cradle. A study carried out in the United Kingdom and another performed in the United States both identified co-sleeping as being common, practiced by 50% or more of families.[19,20]

However, the rates of co-sleeping and the factors associated with them have varied in different studies. In England, the national prevalence of co-sleeping among neonates in 2004 was 46% (95%CI 34-58). Among children aged 3 to 12

Table 1 - Description of the sample and prevalence rates of co-sleeping and nighttime waking, at 12 months of age, by maternal characteristics and neonatal infant variables (cohort of births in Pelotas, RS, Brazil, 2004; n = 3,870)

Variable	Total (%)	Co-sleeping (%)	Nighttime waking (%)
Mother's age (years)		p < 0.001*	p = 0.2
< 20	720 (18.6)	58.1	45.0
20-29	1,922 (49.7)	45.7	45.3
30-39	1,100 (28.4)	38.1	48.3
≥ 40	126 (3.3)	42.1	45.2
Maternal educational level (years graduated) (n = 3,832)		p < 0.001*	p < 0.001
0-4	583 (15.2)	64.7	53.5
5-8	1,573 (41.0)	53.9	45.4
9-11	1,286 (33.6)	35.9	44.2
≥ 12	390 (10.2)	18.7	44.9
Parity		p < 0.001*	p = 0.01*
1	1,531 (39.5)	41.0	43.6
2	1,009 (26.1)	43.3	47.3
3	629 (16.3)	45.6	46.1
≥ 4	700 (18.1)	59.7	49.9
Socioeconomic status (n = 3,108)		p < 0.001*	p = 0.6
A/B	545 (17.5)	20.2	46.8
C	1,085 (34.9)	35.9	43.5
D/E	1,478 (47.6)	61.0	46.7
Paid maternal employment		p < 0.001	p < 0.001
Yes	1,523 (39.4)	39.4	42.7
No	2,344 (60.6)	49.9	48.4
Sex of child		p = 0.4	p = 0.02
Male	2,006 (51.8)	46.4	47.9
Female	1,864 (48.2)	45.1	44.2
Premature		p = 0.2	p = 0.4
Yes	546 (14.1)	48.2	47.8
No	3,320 (85.9)	45.4	45.8
Low birth weight (< 2,500)		p = 0.2	p = 0.6
Yes	321 (8.3)	48.9	47.4
No	3,548 (91.7)	45.5	46.0
Type of delivery		p < 0.001	p = 0.5
Normal	2,122 (54.8)	51.3	46.7
Caesarian	1,748 (45.2)	39.0	45.5
Neonatal intercurrent conditions		p = 0.1	p = 0.7
Yes	435 (11.3)	42.1	46.9
No	3,426 (88.7)	46.1	46.0
Total	3,870 (100)	45.8	46.1

* p with chi-square test and linear tendency.

Table 2 - Habitual sleep characteristics and sleep characteristics during the previous 2 weeks of children at 12 months of age (cohort of births in Pelotas, RS, Brazil, 2004; n = 3,870)

Characteristics	n	%
Habitual characteristics		
Shares bed with whom*		
Mother only	456	25.8
Father only	2	0.1
Another child only	158	8.9
Mother and Father	1,075	60.8
Other adult	78	4.4
Shares bed*		
All night	1,592	89.9
Part of the night	177	10.1
Who puts child to bed		
Mother	3,006	77.7
Father	313	8.1
Mother and father	114	3.0
Goes to sleep alone	178	4.6
Other people	258	6.7
Who deals with the child waking at night†		
Mother	2,172	56.2
Father	82	2.1
Father and mother	168	4.3
Other people	72	1.8
Does not wake up	1,375	35.6
Is slow to go to sleep	1,299	33.6
Wakes during the night to be fed		
Breastmilk	1,180	30.5
Artificial milk (cow's or powdered)	1,103	29.7
No	1,587	39.8
Sleep interferes with mother's wellbeing	621	16.1
Characteristics during previous 2 weeks		
Woke up in the middle of the night	2,494	64.4
Number of nights woke up†		
1-5	870	34.9
6-13	213	8.6
Every night	1,408	56.5
How many woke times per night†		
1	1,147	46.1
2-3	1,080	43.5
≥ 4	258	10.4

* Of the children who don't sleep alone (1,770). *Cont.*
† Of the children who woke at night during previous 2 weeks.
‡ Of the children who napped.

Table 2 - Habitual sleep characteristics and sleep characteristics during the previous 2 weeks of children at 12 months of age (cohort of births in Pelotas, RS, Brazil, 2004; n = 3,870) *(Cont.)*

Characteristics	n	%
Reason for waking†		
Diseases of the child	694	53.9
Teething	157	12.2
Others	437	33.9
Naps during day	3,830	99.0
Number of naps during the day		
1	1,439	37.6
2	1,944	50.8
3 or more	443	11.6
Mother's opinion of child's sleep‡		
Excellent/very good	1,110	28.7
Good	1,913	49.4
Regular/bad	846	21.8

* Of the children who don't sleep alone (1,770).
†Of the children who woke at night during previous 2 weeks.
‡Of the children who napped.

months of age, the prevalence of habitual co-sleeping was uniform, at 21% (95%CI 18-24), and was not associated with maternal age, absence of a partner, or larger families. Nor was it more common during colder months, at weekends or among poorer people.[19]

The inverse association between co-sleeping and socioeconomic status observed here has also been described by other authors.[21,22] In the United States, a cross-sectional study with 101 mothers or carers detected a co-sleeping rate of 88%. Co-sleeping was distributed unequally across different economic classes, with a significantly higher prevalence among poorer people.[22] Being a single mother, having lower educational level and having two or less bedrooms in the home were all factors associated with co-sleeping.[22] In Cleveland, in the United States, co-sleeping was observed among 35% of children aged 6 months to 4 years of age from white families and among 70% of those from black families. Among the children of white families, co-sleeping was associated with lower levels of parental educational.[11]

In contrast, among the population controls selected for a case-control study carried out in England[23] to assess the effect of co-sleeping on the incidence of sudden death among children under 12 months old, the prevalence of habitual co-sleeping among children older than 6 months was 6%. Sharing of a bedroom was observed in 41% of the children (close to that observed here), while 53% slept alone. Similarly, among a cohort of 493 Swiss children followed from birth to 10 years of age,[8] less than 10% exhibited co-sleeping in the first year of life. The prevalence of children who woke during the night was approximately 30%.

The prevalence of nighttime waking detected in this study (46.1%) was higher than has been described by other authors (20 to 30% among children from 1 to 3 years of age)[24,25] and proved to be associated with maternal educational level, paid maternal employment during pregnancy and male sex.

Some studies have detected that children who co-sleep wake more frequently at night.[26,27] In this study, the descriptive comparison between children who did and did not co-sleep confirmed this finding. The analyses of effect, however, did not demonstrate that co-sleeping was an independent determinant of nighttime waking, and this last was protective against co-sleeping. It is possible that waking is being perceived differently by the mothers of children who co-sleep

Table 3 - Raw and adjusted analyses of co-sleeping at 12 months of age, by maternal and infant variables (cohort of births in Pelotas, RS, Brazil, 2004; n = 3,870)

Variable	Raw prevalence ratios (95%CI)	Adjusted prevalence ratios* (95%CI)
Maternal educational level (years' schooling) (n = 3,832)	p < 0.001	p < 0.001
0-4	1.00	1.00
5-8	0.83 (0.77-0.90)	0.92 (0.85-1.01)
9-11	0.56 (0.51-0.61)	0.79 (0.70-0.90)
≥ 12	0.29 (0.23-0.36)	0.58 (0.45-0.76)
Maternal age (years)	p < 0.001	p < 0.001
< 20	1.00	1.00
20-29	0.79 (0.73-0.85)	0.64 (0.59-0.70)
30-39	0.66 (0.60-0.72)	0.47 (0.42-0.53)
≥ 40	0.72 (0.58-0.90)	0.46 (0.37-0.57)
Parity	p < 0.001	p < 0.001
1	1.00	1.00
2	1.06 (0.96-1.16)	1.26 (1.14-1.38)
3	1.11 (1.00-1.23)	1.44 (1.29-1.61)
≥ 4	1.45 (1.34-1.58)	2.00 (1.81-2.21)
Socioeconomic status (n = 3,108)	p < 0.001	p < 0.001
A/B	0.59 (0.54-0.64)	0.47 (0.39-0.57)
C	0.33 (0.28-0.39)	0.69 (0.63-0.76)
D/E	1.00	1.00
Wakes at night	p = 0.09	p = 0.04
No	1.00	1.00
Yes	1.06 (0.99-1.14)	0.92 (0.86-0.99)

* Model adjusted for maternal age, parity, maternal educational level, socioeconomic status, paid maternal employment during pregnancy, neonatal intercurrent conditions and nighttime waking. Variables not listed in this table were not significant.

than by the mothers of those who do not. There are reports that mother-baby interaction is stronger with co-sleeping,[13] particularly if the child is breastfed.[28] Mothers with co-sleeping children who breastfeed wake and respond more frequently and more quickly to the stimuli, even discrete ones, of their children.[29]

Finally, it is important to emphasize that the variation in rates of co-sleeping and nighttime waking identified in different studies reflect not just the cultural and socioeconomic diversity of the populations studied, but also methodological differences in definition of variables and data collection. Limitations common to the majority of these studies include the possibility of memory bias (due to the period of time about which subjects are required to remember details of children's sleep) and the manner in which the information is obtained. In this study, as in the majority, the variables on sleeping and waking were obtained from information provided by the mothers, and may reflect their perceptions more accurately than the true characteristics of their children's sleep.

Summing up, this study has shown that the practice of co-sleeping is common in this study population. Similarly, nighttime waking is a very prevalent disorder. It is necessary that the extent to which these habits persist through childhood be observed and their consequences on child behavior and development be investigated.

Table 4 - Raw and adjusted analyses of nighttime waking at 12 months of age, by maternal and infant variables (cohort of births in Pelotas, RS, Brazil, 2004; n = 3,870)

Variable	Raw prevalence ratios (95%CI)	Adjusted prevalence ratios* (95%CI)
Parity	p = 0.008	p = 0.008
1	1.00	1.00
2	1.08 (0.99-1.18)	1.08 (0.99-1.18)
3	1.06 (0.95-1.17)	1.06 (0.95-1.17)
≥ 4	1.14 (1.04-1.26)	1.14 (1.04-1.26)
Mother employed while pregnant	p = 0.001	p = 0.001
Yes	0.88 (0.82-0.95)	0.89 (0.83-0.95)
No	1.00	1.00
Sex of child	p = 0.022	p = 0.002
Male	1.00	1.00
Female	0.92 (0.86-0.99)	0.90 (0.84-0.96)

* Model adjusted for maternal age, parity, maternal educational level, socioeconomic status, paid maternal employment during pregnancy, sex of child and co-sleeping. Variables not listed in this table were not significant.

References

1. Liu X, Liu L, Owens JA, Kaplan DL. Sleep patterns and sleep problems among schoolchildren in the United States and China. Pediatrics. 2005;115:241-9.
2. Touchette E, Petit D, Seguin JR, Boivin M, Tremblay RE, Montplaisir JY. Associations between sleep duration patterns and behavioral/cognitive functioning at school entry. Sleep. 2007; 30:1213-9.
3. Bruni O, Galli F, Guidetti V. Sleep hygiene and migraine in children and adolescents. Cephalalgia. 1999;19 Suppl 25:57-9.
4. Sadeh A. A brief screening questionnaire for infant sleep problems: validation and findings for an Internet sample. Pediatrics. 2004;113:e570-7.
5. Lozoff B, Askew GL, Wolf AW. Cosleeping and early childhood sleep problems: effects of ethnicity and socioeconomic status. J Dev Behav Pediatr. 1996;17:9-15.
6. Adair R, Bauchner H, Philipp B, Levenson S, Zuckerman B. Night waking during infancy: role of parental presence at bedtime. Pediatrics. 1991;87:500-4.
7. Armstrong KL, Quinn RA, Dadds MR. The sleep patterns of normal children. Med J Aust. 1994;161:202-6.
8. Jenni OG, Fuhrer HZ, Iglowstein I, Molinari L, Largo RH. A longitudinal study of bed sharing and sleep problems among Swiss children in the first 10 years of life. Pediatrics. 2005;115: 233-40.
9. Thome M, Alder B. A telephone intervention to reduce fatigue and symptom distress in mothers with difficult infants in the community. J Adv Nurs. 1999;29:128-37.
10. Van Tassel EB. The relative influence of child and environmental characteristics on sleep disturbances in the first and second years of life. J Dev Behav Pediatr. 1985;6:81-6.
11. Lozoff B, Wolf AW, Davis NS. Cosleeping in urban families with young children in the United States. Pediatrics. 1984;74: 171-82.
12. Scragg RK, Mitchell EA. Side sleeping position and bed sharing in the sudden infant death syndrome. Ann Med. 1998;30:345-9.
13. Baddock SA, Galland BC, Taylor BJ, Bolton DP. Sleep arrangements and behavior of bed-sharing families in the home setting. Pediatrics. 2007;119:e200-7.
14. Jenni OG, O'Connor BB. Children's sleep: an interplay between culture and biology. Pediatrics. 2005;115:204-16.
15. Barros AJ, da Silva dos Santos I, Victora CG, Albernaz EP, Domingues MR, Timm IK, et al. Coorte de nascimentos de Pelotas, 2004: metodologia e descrição. Rev Saude Publica. 2006;40:402-13.
16. Associação Nacional de Empresas de Pesquisa. Critério de classificação econômica do Brasil: ANEP; 1996.
17. Dubowitz LM, Dubowitz V, Goldberg C. Clinical assessment of gestational age in the newborn infant. J Pediatr. 1970;77:1-10.
18. Geib LT, Nunes ML. The incidence of sudden death syndrome in a cohort of infants. J Pediatr (Rio J). 2006;82:21-6.
19. Blair PS, Ball HL. The prevalence and characteristics associated with parent-infant bed-sharing in England. Arch Dis Child. 2004; 89:1106-10.
20. Willinger M, Ko CW, Hoffman HJ, Kessler RC, Corwin MJ; National Infant Sleep Position study. Trends in infant bed sharing in the United States, 1993-2000: the National Infant Sleep Position study. Arch Pediatr Adolesc Med. 2003;157:43-9.
21. Geib LT, Nunes ML. Hábitos de sono relacionados à síndrome da morte súbita do lactente: estudo populacional. Cad Saude Publica. 2006;22:415-23.
22. Weimer SM, Dise TL, Evers PB, Ortiz MA, Welldaregay W, Steinmann WC. Prevalence, predictors, and attitudes toward cosleeping in an urban pediatric center. Clin Pediatr (Phila). 2002; 41:433-8.
23. Blair PS, Fleming PJ, Smith IJ, Platt MW, Young J, Nadin P, et al. Babies sleeping with parents: case-control study of factors influencing the risk of the sudden infant death syndrome. CESDI SUDI research group. BMJ. 1999;319:1457-61.

24. Blader JC, Koplewicz HS, Abikoff H, Foley C. Sleep problems of elementary school children. A community survey. Arch Pediatr Adolesc Med. 1997;151:473-80.

25. Owens JA, Spirito A, McGuinn M, Nobile C. Sleep habits and sleep disturbance in elementary school-aged children. J Dev Behav Pediatr. 2000;21:27-36.

26. Mosko S, McKenna J, Dickel M, Hunt L. Parent-infant cosleeping: the appropriate context for the study of infant sleep and implications for sudden infant death syndrome (SIDS) research. J Behav Med. 1993;16:589-610.

27. Mosko S, Richard C, McKenna J, Drummond S. Infant sleep architecture during bedsharing and possible implications for SIDS. Sleep. 1996;19:677-84.

28. Ball HL. Parent infant bad-sharing behavior: effects of feeding type and presence of father. Hum Nat. 2006;17:301-18.

29. Baddock SA, Galland BC, Bolton DP, Williams SM, Taylor BJ. Differences in infant and parent behaviors during routine bed sharing compared with cot sleeping in the home setting. Pediatrics. 2006;117:1599-607.

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