

Sleep Position and Infant Care Practices in an Urban Community in Kuala Lumpur

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SUMMARY

Several modifiable risk factors for sudden infant death syndrome (SIDS) have been identified such as sleeping prone or on the side, sleeping on a soft surface, bed-sharing, no prenatal care and maternal ante-natal smoking. A cross-sectional survey of infant sleep and care practices was conducted among parents of babies aged below 8 months to determine the prevalence and predictors of non-supine sleep position and the prevalence of other high-risk infant care practices for SIDS. Of 263 infants, 24.7% were placed to sleep in the non-supine position and age of infants was a factor positively associated with this (adjusted odds ratio 1.275, 95% CI=1.085, 1.499). The most common modifiable risk factor was the presence of soft toys or bedding in the infants' bed or cot (89.4%). Results from this study indicate that although the predominant sleep position of Malaysian infants in this population is supine, the majority of infants were exposed to other care practices which have been shown to be associated with SIDS.

KEY WORDS:

Sudden Infant Death Syndrome (SIDS), Sleep position, Infant care

INTRODUCTION

Sudden infant death syndrome (SIDS) is defined as "the sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history"¹. There are several modifiable risk factors for SIDS, the most significant one being prone sleeping (adjusted odds ratios (aOR) =2.6)². Side-sleeping is another recognised independent risk factor, and the risk is almost high as prone-sleeping (aOR=2.0)². Other risk factors include overheating, preterm birth and/or low birth weight, male gender, sleeping on a soft surface, bed sharing, late or no prenatal care, young maternal age and maternal smoking during pregnancy². Recognition of these risk factors led to campaigns to modify infant care practices in the early 1990's, especially in Western countries where the incidence of SIDS was the highest. Since then, the incidence of SIDS has been reported to be declining. Data from the National Infant Sleep Position Study in the United States of America (USA) showed the prevalence of prone sleeping had decreased from 70.1% in 1992 to 11.1% in 2002³. There was a concomitant drop of 53% in SIDS deaths over this period².

Despite the initial encouraging data, there remains persistence in prone and side sleeping and other modifiable risk factors³⁻⁶. Studies have found that very low birthweight babies, African-American babies, infants with large families, firstborn infants and those with a grandparent living in the house were more likely to sleep prone^{5,7}. Such information has been found to be useful, as these at risk groups have been targeted for further intervention.

The incidence of SIDS differs between countries. Available data suggests that this is low in East Asia. Singapore, Japan and Hong Kong each reported SIDS incidences of 0.2/1000, 0.24/1000 and 0.16/ 1000 live births respectively⁸⁻¹⁰. Evidence from Hong Kong and Japan has shown that the risk factors for SIDS are similar to the risk factors of Western countries^{8,10}. The lower overall incidence of SIDS is thought to be due in part to the traditional cultural practice of placing infants supine to sleep⁴. The incidence of deaths due to SIDS and the risk factors for SIDS in Malaysia is unknown as there is no active surveillance. However, Kumar et al reported that 2% of 143 post-mortems done in children 12 years and below were due to SIDS¹¹.

The purpose of this study was to determine the prevalence of non-supine infant sleeping and other infant care practices potentially associated with SIDS in urban Malaysians. In addition, we aimed to identify determinants of non-supine sleeping. Information from this study may be of use particularly during the planning of health education programmes.

MATERIALS AND METHODS

A cross-sectional survey of infant sleep and care practices was conducted among parents of babies aged below 8 months attending three maternal-child health clinics for scheduled vaccination and developmental assessment. This age-range was chosen as it encompasses the greatest number of infants attending these clinics, and as the incidence of SIDS is highest between 1 to 6 months of age. Parents who did not speak Malay, English or Mandarin were excluded. The clinics were located in an urban area (Kuala Lumpur) and the study was carried out between April 10th to May 12th, 2006, after receiving ethical approval from the Faculty of Medicine Research and Ethics committee at Universiti Kebangsaan Malaysia. Written, informed consent was obtained from parents upon acceptance to be interviewed.

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Parents were asked twenty questions covering demographic details, infant sleep and care practices, and social characteristics which may impact on this. Socio-demographic data was collected regarding each infant's age, sex, race and birth weight; maternal age, antenatal smoking and education; household income, other household smokers, number of children and if a grandmother was living in the household. Questions on infant care practices included the usual place of sleep, bed sharing, presence of soft toys, pillows or bolsters in the sleep area, sleep surface and co-sleeping on the sofa. Parents were asked what position they usually put their child to sleep and the reasons for doing so. In addition, parents were asked if they had ever heard of SIDS and if they had received information from health care professionals on sleep position. To minimise difficulties with comprehension and literacy, parents were interviewed by fourth year medical students trained to administer the questions in a standardised manner.

The sample size required was 246 and was calculated using the formula for the estimation of a single proportion within a single group. The proportion of babies sleeping non-supine in Malaysia was estimated to be 20%, based on various studies in Asia – non-supine sleeping in Tokyo and Hong Kong has been shown to be 11% and 18% respectively⁴.

Data was analysed using SPSS software (version 12, SPSS Inc., Chicago, USA). The Pearson Chi-squared test and Fisher's exact test were used to compare the association between sleep position and infant care practices. Multiple logistic regression analysis was used to determine the association between non-supine sleeping and socio-demographic factors. As prone and side-sleeping are both risk factors for SIDS, data from these groups were combined for the logistic regression analysis. Crude and adjusted odds ratios and p values were obtained. A p value of <0.05 was considered to be statistically significant.

RESULTS

A total of 263 parent-infant pairs participated in this study. Mean age of infants was 3.7 months, mean age of mothers was 29.3 years and 51% of the infants were male. A total of 198 infants (75.3%) were placed to sleep supine, 48 (18.2%) were placed on their sides and 17 (6.5%) were placed prone. There were 127 parents (48.3%) who were aware of SIDS. Only age of infants was a factor positively associated with non-supine sleep position after multivariable logistic regression (aOR 1.275, 95% CI=1.085-1.499) (Table I). The most common modifiable risk factor practiced was the presence of soft toys, pillows or bolsters in the infants' bed or cot (89.4%) (Table II). A total of 163 infants (62%) had more than one object in their sleeping area. There were 101 infants (38.4%) who slept on quilts, while 172 infants (65.4%) shared a bed with either their parents, siblings, grandmother or maid. Most of this group (97.7%) shared a bed with their parents. Infants co-sleeping with family members on a sofa occurred at least once in 46 families (17.5%). Maternal antenatal smoking was uncommon (1.5%), however 150 infants (57.0%) had other household members (mostly father) who smoked. A larger proportion of infants who slept non-supine had additional potential risk factors for SIDS such as bed sharing, co-sleeping on the couch and the presence of

soft objects in their sleep area compared to those who slept supine (Table II). However, differences between the two groups with additional risk factors were not significant. Only 64 parents (24.3%) had received information about sleep practices from health care practitioners (Table I).

DISCUSSION

The present study shows that infants in this urban Malaysian population were more commonly placed to sleep supine (75.3%) compared to on their sides (18.2%) or prone (6.5%). Birth weight, maternal education, household income, number of siblings, the presence of grandmother as a household member and not receiving advice about sleep practices were not predictors of non-supine sleeping, unlike results from other studies^{5,7}. Furthermore there was no association with sleep position and ethnicity, unlike in Thailand where the Buddhist religion (but not Muslim or Christian religions) was positively associated with sleeping prone¹². The rates of supine sleeping were high despite the fact that only 48.3% of parents in this cohort had ever heard of SIDS and only 24.3% had received information about sleep practices. This lack of association between infant sleep position and socio-demographic factors or parental awareness of SIDS suggests that supine sleeping in infancy is an inherent practice in Malaysian culture. This finding is in keeping with other Asian studies in which the main position of sleep is supine such as Hong Kong (82%) and Tokyo (89%)⁴. Older babies were more likely to be placed non-supine to sleep in this study. This could be due to the fact that many babies are able to roll from supine to prone from 5 months of age. Parents cited comfort and baby's preference for this position as the main reasons for placing infants in the non-supine position, a finding consistent with other similar studies^{13,14}. Although it may not have totally shaped the parents practices in our study population, this misconception should be addressed in safety campaigns.

Bed sharing was a common practice in this cohort (65.4%). This result is comparable to available data from Asian countries, where the rates of bed sharing are relatively high (37-88%) compared to most Western countries (15-35%)^{12,15}. There is conflicting evidence from epidemiological studies regarding bed sharing as a risk factor for SIDS, however a few recent case-controlled studies have shown increased risks through bed sharing (aOR 2.89-3.53)^{16,17}, especially for infants less than 11 weeks of age and if mothers smoke. The risk for suffocation of infants who bed share compared with those in cribs is even greater, up to 40-fold¹⁸. Thus most infant sleep practice policies advice sleeping in a crib in the parents' room. Co-sleeping on the couch is a particularly high risk practice for both SIDS¹⁶ and suffocation; it is of concern that 17.5% of this cohort engaged in this. Scheers et al found that 12% (n=883)¹⁸ of deaths due to accidental infant suffocation have involved co-sleeping on a couch with an adult. The mechanisms of suffocation are overlying and entrapment.

Other high-risk infant practices in this cohort were sleeping on quilts and with pillows or soft toys, which are independent risk factors for SIDS^{19,20}. Quilts are potentially more harmful in hot, tropical countries as SIDS has been associated with over heating¹⁶. The combination of sleeping

Table I: Logistic regression analysis of the predictors of non-supine sleep position

Factor	n (%)	Non-Supine Sleep Position			
		No. sleeping non-supine (%)	Unadjusted OR	95% CI	p
Age	263 (100)	65 (24.7)	1.275	1.085-1.499	.003 ^a
Race					
Malay	187 (71.1)	49 (26.2)	1.0	(referent)	-
Chinese	43 (16.4)	6 (14.0)	0.457	.182-1.148	.096
Indian	24 (9.1)	6 (25.0)	0.939	.352-2.501	.899
Others	9 (3.4)	4 (44.4)	2.253	.581-8.731	.240
Birth weight					
< 2500g	37 (14.1)	9 (24.3)	.976	.434-2.192	.953
≥ 2500g	226 (85.9)	56 (24.8)	1.0	(referent)	-
Mothers education level					
Primary- secondary	195 (74.1)	48 (24.6)	.980	.517-1.855	.950
Tertiary	68 (25.9)	17 (25.0)	1.0	(referent)	-
Household income					
< RM 1500	118 (44.8)	27 (22.9)	0.991	.513-1.914	.979
RM 1501-3000	88 (33.5)	20 (22.7)	1.556	.769-3.147	.219
> RM 3000	57 (21.7)	18 (31.6)	1.0	(referent)	-
Parental awareness of SIDs					
Yes	127 (48.3)	24 (18.9)	1.141	.651-1.999	.645
No	136 (51.7)	41 (30.1)	1.0	(referent)	-
Received sleep practice advice					
Yes	64 (24.3)	20 (31.3)	1.556	.833-2.904	.165
No	199 (75.7)	45 (22.6)	1.0	(referent)	-
No. of children in household					
≤ 3 children	211 (80.2)	55 (26.1)	1.0	(referent)	-
≥ 3 children	52 (19.8)	10 (19.2)	.675	.317-1.437	.308
Grandmother living in household					
Yes	68 (25.9)	19 (27.9)	1.256	.673-2.345	.474
No	195 (74.1)	46 (23.6)	1.0	(referent)	-

^aRetained in the final model for non-supine sleep, after multivariable logistic regression and goodness-to-fit analyses: age [adjusted OR 1.275 (95% CI 1.085-1.499), p = .003].

Table II: Co-existence of other potential high-risk infant care practices with different sleep positions

Infant care practice	Total (%) n= 263	Sleep position		p value
		Supine (%) n=198	Non-supine (%) n=65	
Bed sharing	172 (65.4)	122 (61.6)	50 (76.9)	0.54
Co-sleeping on couch	46 (17.5)	33 (16.7)	13 (20)	0.54
Soft toys/soft bedding in sleep area	235 (89.4)	176 (88.9)	60 (92.3)	0.43
More than one soft object in sleep area	163 (62.0)	125 (63.1)	38 (58.5)	0.50
Sleeps on quilt	101 (38.4)	77 (38.9)	24 (36.9)	0.78
Maternal ante-natal smoking	4 (1.5)	3 (1.5)	1 (1.5)	1.00
Other smokers in the household	150 (57.0)	108 (54.5)	42 (64.6)	0.16

prone on a soft bedding surface is a particularly hazardous practice²⁰; yet 24 infants in this cohort slept non-supine on quilts. Another worrying trend in this cohort was the fact that 92.3% of the infants sleeping non-supine had one or more additional potential risk factors for SIDS. These findings may be because of the lack of awareness regarding SIDS.

Maternal antenatal smoking was rare in this population. This may be protective against SIDS. In some countries with a low incidence of SIDS such as Hong Kong, maternal smoking is

uncommon⁴. In 57% of the households, there were other smokers, mainly fathers. There is slight increase in the relative risk of SIDS (pooled unadjusted RR 1.49, 95% CI=1.25, 1.77) if only father is a smoker²¹.

There is a paucity of information regarding the incidence and risk factors for SIDS in Malaysia. Data from this study indicates that many infants in this cohort were subjected to potentially high-risk infant care practices. There is a substantial body of evidence indicating that the major risk

factors for SIDS such as prone sleeping and maternal smoking are applicable to infants in many countries²², including Hong Kong and Japan^{8,10}. In Japan, the already low incidence of SIDS of 0.42 per 1000 live births was almost halved to 0.24 per 1000 live births after the introduction of safe sleep practices campaigns¹⁰. It would therefore be prudent to implement preventive measures based on what is already known about SIDS while waiting for more local information to be available. Data from this study suggests that when advice is given to parents, emphasis should be placed on sleep position as well as discouraging sleeping on soft surfaces or with soft objects. The Malaysian Paediatric Association and the Ministry of Health published a child injury prevention booklet in 2005 recommending supine sleep position for infants and sleeping on a firm surface without pillows or soft toys²³. Yet only 24.7% of parents from the present study reported receiving advice regarding safe sleep practices from health care personnel. In the USA, where there are continuous educational efforts on safe infant care practices, up to 70.6% of parents recall receiving information regarding sleep position⁶.

One limitation of this study was that the subjects were from a selected cohort (urban and mostly of Malay ethnicity) and therefore may not have been representative of the Malaysian population as a whole. Further studies on the predictors of infant care practices other than sleep position may be beneficial. The strength of this study is the fact that the survey was done by interview, hence allowing clarification of facts and reducing missing data.

CONCLUSION

Our results indicate the predominant sleep position of Malaysian infants in this population is supine. However 24.7% of the infants were placed non-supine to sleep and the majority of infants were exposed to other care practices which have been shown to be associated with SIDS. In view of these results, more research needs to be done regarding the incidence and risk factors for SIDS in Malaysia. General awareness of SIDS and information received about safe infant care practices among parents in this cohort was relatively low, indicating a greater need for appropriate, early advice. As there are no other similar published studies on Malaysian infants, data from this study is useful for the development of health education campaigns.

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