The Prevalence and Characteristics Associated with Mother-Infant Bed-Sharing in Klang District, Malaysia

K L Tan, MPH* , S N Ghani, MPH** , F M Moy, PhD**

*Department of Community Medicine, International Medical University, Bukit Jalil, 57000 Kuala Lumpur, Malaysia, **Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

SUMMARY

This was a cross-sectional study to determine the prevalence and characteristics of mother-infant bed-sharing practice in Klang district, Malaysia. Data was collected by face-to-face interview using a structured questionnaire for a four month period in 2006. A total of 682 mother-infant pairs attending government health clinics were included in the study. Data regarding socio-demographic characteristics of the mothers, information on the infants, bed-sharing and breastfeeding practices were collected. The mean maternal age was 28.4 ± 5.1 years while the mean infant gestational age was 38.8 ± 1.8 weeks. The study showed the prevalence of bed-sharing was 73.5% (95% CI: 70.0, 76.7). In multivariate analysis; area of interview, maternal occupation, family income, breastfeeding and infant birth weight were associated with bed-sharing after adjusted for maternal ethnicity, age, marital status, educational level, parity, infant gender and infant gestational age. In conclusion, bed-sharing is a common practice in Klang district, Malaysia, not specific to ethnicity, but strongly associated with low family income and breastfeeding.

KEY WORDS:
Bed-sharing, Maternal factors, Infant factors, Breastfeeding, Malaysia

INTRODUCTION

Infant sleeping in a bed with their parents, a practice referred to as bed-sharing, is a controversial topic[1]. Bed-sharing is a common practice in many non-Western cultures where it has been considered a part of traditional child rearing practice[2-4]. However, in Western societies, bed-sharing practice has been considered as a cultural taboo and people believe it is a norm for a child to sleep separately from the parents immediately after birth[5].

Epidemiological studies suggest that bed-sharing increased the risk of sudden infant death syndrome, particularly when associated with maternal smoking[6-8]. Several other studies have associated bed-sharing with behavioural and emotional problems among children[9,10]. Conversely, others have promoted bed-sharing as a parenting strategy to enhance attachment, and some breastfeeding advocates encourage bed-sharing as a mechanism to facilitate breastfeeding[11-13].

Since very little data exist on bed-sharing in Asian countries, this study reports such data from Malaysia. The objectives of the study were to determine the prevalence and associated factors of bed-sharing among mother-infant pairs in a district in Peninsular Malaysia.

MATERIALS AND METHODS

This was a cross-sectional study conducted in Klang district, Peninsular Malaysia involving 682 mother-infant pairs with infants up to six months attending the Maternal and Child Health (MCH) section of the government health clinics between 19 June and 19 October 2006. In Klang, there are eight government health clinics with their subsidiary community clinics providing health needs of the community. Two of the health clinics including their subsidiary community clinics were chosen for the study by random selection where one health clinic (Bukit Kuda Health Clinic) serves an urban population while the other (Kapar Health Clinic) serves a rural population.

The sample size was determined using the Power and Sample Size Calculation Programme Version 2.0 software. The estimation used to calculate the minimum sample size required was based on 80% power with a 95% CI to detect an odds ratio of 1.6 for the association between bed-sharing and breastfeeding[11]. The minimum sample size required was 626 mother-infant pairs. The sample size taken for the study was 640 mother-infant pairs to allow for a 5% drop out during interview.

The sampling method used was systematic random sampling with consecutive sample of mother-infant pairs with infants up to six months of age. The inclusion criteria in the study included all mother-infant pairs visiting Bukit Kuda and Kapar Health Clinic including the subsidiary community clinics between 19 June and 19 October 2006. Mother-infant pairs were excluded from the study if mothers were less than 18 years, have a child with congenital malformation, infants more than six months, infant with congenital malformation, infant taken care by caregivers during night time and infant not accompanied by mother at the clinic.

Data collection was carried out according to a schedule that was prepared. Data was collected from the two identified areas in the study at alternate weeks with designated days for each clinic. The specific days selected for data collection for each clinic coincided with the days where immunization was scheduled for the infants.

After consent from eligible mothers, a face to face interview using a pre-tested pre-coded structured questionnaire was conducted by the author in the clinics. A questionnaire consisting of socio-demographic characteristics of the mothers, information on the infants, bed-sharing and breastfeeding practices was used. The questionnaire was pre-tested among 35 mother-infant pairs from another health clinic in the same district. The reliability of the questionnaire was conducted using the test-retest method among the 35 mother-infant pairs two weeks apart. The correlation coefficient among the questions in the questionnaire was between 0.82 and 1.00. Bahasa Malaysia was used as the medium of interview since it is the national language and commonly used among the respondents. A yellow sticker was placed on the right upper corner of the infants' immunization card after the interview to prevent interviewing the same mother-infant pair during the entire four months of data collection.

Data on bed-sharing and breastfeeding were based on practice in the past one month. Bed-sharing was defined as an infant sharing a bed with mother, and infant must be within arms reach from the mother. A bed was defined as either a sleeping mattress placed on a bed frame or a sleeping mattress placed on the floor. Breastfeeding was defined as any breastfeeding in the past one month.

Sleeping arrangement in the past one month preceding the interview were divided into six categories: frequent all-night bed-sharing (three or more times a week for all of the night), frequent part-night bed-sharing (three or more times a week for part of the night), occasional all-night bed-sharing (more than once a month but less than three times a week for all of the night), occasional part-time bed-sharing (more than once a month but less than three times a week for part of the night), situational bed-sharing (an isolated or extraordinary occurrence such as illness, vacation or visitors) and no bed-sharing. Among these six categories, those who fell under frequent all-night and frequent part-night bed-sharing were defined as the bed-sharing group while the remaining four groups were defined as the non bed-sharing group.

All variables listed in the questionnaire were coded and entered into Statistical Package for the Social Sciences (SPSS) version 11.0 for Windows. Univariate analysis between various factors and bed-sharing were conducted using binary logistic regression. Multivariate logistic regression was used to examine factors associated with bed-sharing while controlling for potential confounders. Odds ratio and 95% confidence intervals were calculated and reported where appropriate. All variables were included in the initial multivariate model. Variables were removed from the final logistic model if they were not associated with bed-sharing and their removal from the model did not affect the association of other variables in the model.

RESULTS
A total of 682 mother-infant pairs participated in the study. The mean (SD) maternal age was 28.4 (5.1) years. About 60% of the respondents were from urban area. About sixty one percent of the respondents were Malays followed by Chinese, Indian and other ethnic group. Mothers in the study were predominantly not working (57.6%), had secondary school education (78.1%), married (99.6%) and from family income between RM1,500 and RM3,500 (66.1%). The mean (SD) infant gestational age and birth weight were 38.8 (1.8) weeks and 3.03 (0.49)kg respectively with slightly more male infants (53.7%) (Table I).

Table II showed bed-sharing by maternal and infant characteristics. The prevalence of bed-sharing among mothers with infant age between one and six months was 73.5% (95% CI: 70.0, 76.8). There was no evidence to show that younger mothers (less than 21 years), mothers with lower educational level, mothers of larger families (parity ≥ 4), female infant and term infant (≥ 37 gestational weeks) were more likely to bed-share. Mothers from rural area, Malay ethnic group, non-working mothers, low family income, breastfeeding and normal birth weight infant were significantly associated with bed-sharing (p < 0.05).

In the multivariate analysis, factors significantly associated with bed-sharing (p < 0.05) were area of interview, maternal occupation, family income, breastfeeding and infant birth weight (Table III). Bed-sharing was almost twice more common among mothers from rural area compared to urban area and among not working mothers compared to working mothers. Bed-sharing was twice more common among normal birth weight infants compared to low birth weight infants.

Family income and breastfeeding were strongly associated with bed-sharing. The odds of bed-sharing increased as family income decreased. Bed-sharing was twice more common among middle family income (RM1,500 – RM3,500) and five times more common among low family income (< RM1,500) compared to high family income (> RM3,500). Breastfeeding was strongly associated with bed-sharing with a fourfold odds ratio between breastfeeding and bed-sharing.

DISCUSSION
The prevalence of bed-sharing among mothers with infant age between one and six months was 73.5%. The prevalence was high compared to other studies. However, studies have reported that bed-sharing was more common among Asian countries and Asian origin in Western countries[2,4,11]. Estimates of bed-sharing prevalence in westernized countries appear to yield lower proportions. A study from the United States reported that among predominantly low income inner-city families, 48% of infants regularly bed-shared at three to seven months of age[14], while a large study in New Zealand determined that 43% of infants recently bed-shared at three months of age[15]. Blair et al. reported the prevalence of bed-sharing among one month old infant as 47% while among three to four month old infant as 30%[13].

The importance of cultural influence and family values on infant and childhood sleep were anticipated more than a decade ago. It was common among Asian families to relate bed-sharing as part of traditional child rearing practice and close-knit familial bonding as part of cultural value and belief[2]. It was a common belief and practice among Asian parents to allow dependency of a child on parents until they grow up. A high prevalence of bed-sharing in this study and

other studies among Asian origin or Asian origin in Western countries was related to cultural influence. In this study, the definition of bed-sharing was not restricted to sharing a conventional bed but included sharing a sleeping mattress placed on the floor. This was to accommodate for common local practices. The age group of infants included in this study was between one and six months and studies have shown that the prevalence of bed-sharing was higher among this age group[6,11].

Bed-sharing was more common among mothers from rural compared to urban area. Willinger *et al.* showed that mother's from rural area was 1.6 times more likely to practice bed-sharing (95% CI: 1.2, 2.3) compared to mother's from urban areas[16] while Brenner et al. showed that bed-sharing was more common among US population from rural city (49%) compared to urban city (16%)[14]. Mothers from rural area were commonly non working mothers with low family income and large family. Changing demographic pattern as a result of improved economic conditions has westernized the profile of family structure and function in urban areas. Families in urban areas have small household members, larger house and working parents[2]. These factors contributed to a significant association between rural area mothers and bed-sharing.

In this study, bed-sharing was associated with non-working mothers and mothers from low family income group. Study by Carpenter *et al.* involving twenty regions in Europe showed an adjusted odds ratio for bed-sharing of 1.85 (95% CI: 1.39, 2.45) for unemployed compared to employed mothers after adjusted for partner's employment, mother's age and number of previous livebirth.[6] McCoy *et al* reported that bed-sharing was more common among non employed mothers and mothers from a household income of less than US$20,000 a year[11]. Although women in Malaysia are increasingly pursuing their career, the majority of mothers (almost 60%) in this study remain full time housewives. The effect of mother's occupation on bed-sharing is relatively small but in the future when maternal careers become a social force, it is predicted that the present bed-sharing pattern will tend to change.

Breastfeeding was strongly associated with bed-sharing. Since breastfeeding mothers usually bed-share as a mean to ameliorate the disruption of nocturnal breastfeeding[17], we would expect that breast feeding mothers will predominate in any population of bed-sharers; an expectation confirmed in this study. McCoy *et al.* concluded that on multivariate analysis, breastfeeding and ethnicity have the strongest association of bed-sharing[11]. Breastfeeding was associated with bed-sharing throughout the first six months of life. The approximate fourfold odds ratio for breastfeeding and bed-sharing remained consistent over a six month period indicating that breastfed infants were more likely to bed-share during this six month period. A study by McKenna *et al* among Latin mother-infant pairs concluded that bed-sharing promotes breastfeeding[12].

Bed-sharing was more common among normal weight infants compared to low birth weight infants (< 2.4kg) in this study. Other studies showed contradicting findings where there was no association between infant's birth weight and bed-sharing using the same definition for low birth weight[11,14,16]. Lahr *et al.* showed bed-sharing to be more common among infants with birth weight more than 1.5kg[7]. Low birth weight infants have poor sucking reflex and poorly adapted physiological system. Poor sucking reflex leads to decreased breastfeeding. Decreased breastfeeding and fear of poor adaptive ability of the infant deter mothers to bed-share with low birth weight infants.

Table I: Socio-demographic characteristics of respondents in the study (n = 682)

Socio-demographic Characteristics		Mean (SD)	n (%)
Maternal Age (years)		28.4 (5.1)	
Infant Birth Weight (kg)		3.03 (0.49)	
Infant Gestational Age (weeks)		38.8 (1.8)	
Area	Bukit Kuda (Urban)		407 (59.7)
	Kapar (Rural)		275 (40.3)
Maternal Ethnicity	Malay		415 (60.9)
	Chinese		128 (18.8)
	Indian		109 (16.0)
	Others		30 (4.3)
Maternal Education Level	Diploma/ Degree		109 (16.0)
	Secondary School		533 (78.1)
	Primary School		40 (5.9)
Maternal Occupation	Working		289 (42.4)
	Not working		393 (57.6)
Marital Status	Married		679 (99.6)
	Single, Divorced, Widow		3 (0.4)
Family Income (RM)	> 3,500		52 (7.7)
	1500 – 3500		451 (66.1)
	< 1,500		179 (26.2)
Infant Gender	Male		366 (53.7)
	Female		316 (46.3)
Infant's Age (months)	1		139 (20.4)
	2		111 (16.3)
	3		123 (18.0)
	4		96 (14.1)
	5		102 (15.0)
	6		111 (16.3)

SD, standard deviation

Table II: Bed-sharing by maternal and infant characteristics among respondents (n = 682)

Characteristics		Bed-sharing (n=501) n (%)	No Bed-sharing (n=181) n (%)	p value*
Maternal Factors				
Area	Bukit Kuda (Urban)	282 (69.3)	25 (30.7)	0.011
	Kapar (Rural)	219 (79.6)	56 (20.4)	
Ethnicity	Malay	346 (83.4)	69 (16.6)	< 0.001
	Chinese	49 (38.3)	79 (61.7)	
	Indian	85 (78.0)	24 (22.0)	
	Others	21 (70.0)	9 (30.0)	
Age (years)	≥ 21	484 (73.6)	174 (26.4)	0.699
	< 21	17 (70.8)	7 (29.2)	
Marital Status	Married	501 (73.8)	178 (26.2)	0.547
	Single, Divorced or Widow	0 (0)	3 (100)	
Educational Level	Diploma/ Degree	65 (59.5)	44 (40.4)	0.190
	Secondary School	405 (76.0)	128 (24.0)	
	Primary School	31 (77.5)	9 (22.5)	
Occupation	Working	27 (55.1)	22 (44.9)	0.002
	Not working	474 (74.9)	159 (25.1)	
Parity	< 4	395 (70.9)	162 (29.1)	0.451
	≥ 4	106 (84.8)	19 (15.2)	
Family Income	> 3,500	24 (46.2)	28 (53.8)	0.033
	1500 – 3500	323 (71.6)	128 (28.4)	
	< 1,500	154 (86.0)	25 (14.0)	
Breastfeeding	No	102 (50.7)	99 (49.3)	< 0.001
	Yes	399 (83.0)	82 (17.0)	
Infant Factors				
Gender	Male	261 (71.3)	105 (28.7)	0.436
	Female	240 (75.9)	76 (24.1)	
Birth Weight (kg)	< 2.5	51 (59.3)	35 (40.7)	0.001
	≥ 2.5	450 (75.5)	146 (24.5)	
Gestational Age (weeks)	< 37	42 (61.8)	26 (38.2)	0,934
	≥ 37	459 (74.8)	155 (25.2)	

OR, Odds Ratio; CI, Confidence Interval
* p value computed by binary logistic regression

Table III: Predictors of bed-sharing among respondents

Characteristics		Crude OR	Adjusted OR*	95% CI
Maternal Factors				
Area	Bukit Kuda (Urban)	1.00	1.00	
	Kapar (Rural)	1.73	1.73	1.16, 2.57
Occupation	Working	1.00	1.00	
	Not working	2.43	2.21	1.16, 4.21
Family Income (RM)	> 3,500	1.00	1.00	
	1500 – 3500	2.94	2.44	1.29, 4.58
	< 1,500	7.18	5.07	2.41, 10.65
Breastfeeding	No	1.00	1.00	
	Yes	4.72	4.07	2.78, 5.97
Infant Factors				
Birth Weight (kg)	< 2.5	1.00	1.00	
	≥ 2.5	2.12	2.39	1.42, 4.04

OR, Odds Ratio; CI, Confidence Interval
* OR computed by multiple logistic regression controlling for all variables listed plus maternal ethnicity.

CONCLUSION

Mother-infant bed-sharing is a common practice in Klang district, Malaysia and is influenced by a complex variety of factors. Bed-sharing is not specific to ethnicity, but have the strongest association with low family income and breastfeeding. All of these issues need to be considered in analyzing the overall risks and benefits of bed-sharing, paying particular attention to breastfeeding.

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