



SIDS-related knowledge and infant care practices among Māori mothers

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Abstract

Aim Māori have high SIDS rates and relevant information is needed to craft appropriate prevention strategies. The aim of the study was to determine what Māori mothers know about SIDS prevention, and to determine their SIDS-related child care practices.

Methods Māori mothers who gave birth in the Counties Manukau District Health Board area were surveyed about their SIDS related knowledge, and infant care practices and their reasons for using and their concerns about these practices. Results were compared with a similar 2005 survey of a largely European sample.

Results Knowledge of Māori mothers about SIDS prevention was much lower than for European mothers. More Māori infants slept prone and Māori mothers stopped breastfeeding significantly earlier. Although co-sleeping rates were similar, bedsharing increased to 65% for some part of the night. In addition, more than half of the Māori mothers had smoked in pregnancy and 21% of them were sharing a bed with their infant. Potentially unsafe soft objects such as rolled blankets or pillows were used by a third of mothers to help maintain the sleep position.

Conclusions Māori mothers have a poorer knowledge of SIDS prevention practices. The high rate of maternal smoking, the early cessation of breastfeeding, and co-sleeping where there was smoking in pregnancy were also areas of concern. Appropriate health promotion measures need to be developed for the high-risk Māori community.

In 2005, a survey of mostly European mothers who birthed at National Women's Hospital (NWH) in Auckland, New Zealand demonstrated that the benefits of supine sleeping, not smoking, and breastfeeding appeared to be well understood but that more education about keeping the face clear and sleeping in the parents' room was needed.^{1,2}

Although these recognized sudden infant death syndrome (SIDS) risk factors have been incorporated into New Zealand health care,³ Māori infants continue to have higher SIDS rates than the general population.⁴ Living in socioeconomic deprivation and having reduced access to health care has made health promotion more difficult,^{5,6} in particular, around the issue of bed-sharing/co-sleeping when associated with maternal smoking in pregnancy.⁶⁻⁸

SIDS is the leading cause of preventable death in the post-neonatal period and rates have been falling over the past two decades. Although Māori SIDS rates have fallen from 9.9 per 1000 live births in 1984 to 1.6 per 1000 live births in 2002, 70% of the

40 SIDS deaths in 2005 were Māori and the Māori SIDS rate was five times that of non-Māori, non-Pacific infants.⁴ In addition, Māori rates of sudden unexpected deaths in infancy have not declined over the 2002–2008 period.⁹ Information on SIDS-related knowledge and infant care practice by Māori mothers is therefore needed. In 2008 therefore, a 2005 survey protocol that investigated these issues with a largely European sample was repeated with Māori mothers in the Counties Manukau (CM) District Health Board area.

Methods

In the period 21 July to 31 December 2008, 734 eligible Māori women gave birth in the Counties Manukau region. Mothers were ineligible if they had had a previous SIDS experience or their infants had not yet been discharged from hospital. The mother's demographic details, parity and smoking status and the infant's date of birth, National Health Index number, transfer/discharge details, birth-weight and gestation were collected from the birth records. A pathologist checked infant mortality records to ensure none of the infants belonging to listed mothers had died.

In order to better recruit Māori mothers to this survey we elected to use a telephone rather than postal contact, to use Māori women as interviewers (second year medical students on Summer Student Research Scholarships) and to home visit if telephone contact was not made. An attempt was made to phone the mothers when the infants were either 6-8 week or 3-4 month of age, as per the 2005 study protocol. If successful, they were given an explanation of the research and were invited to participate either by telephone interview or a home visit. If unsuccessful, they were phoned repeatedly until the babies fell out of the age brackets. Some, who were unable to be contacted, were visited at their home addresses and, if home, were invited to take part.

Participants were asked to list all factors that they thought might help reduce the risk of SIDS, and from where and from whom they had received their information. The interviewers enquired about current practices of maternal smoking, breastfeeding and both 'last night' and 'usual practice' infant sleep position and bed sharing. In addition, participants were asked about room sharing, pacifier use, plastic mattress wrapping, head shape concerns and positioning devices. Their concerns about and reasons for using these practices was also surveyed. An information sheet regarding the research project, SIDS prevention pamphlets, and a small token of appreciation (a \$20 petrol voucher) were later posted to the mother.

The socioeconomic status of each infant was derived from the NZDep2006 code10 based on the mesh block of the place of residence. The survey results from the two age groups were compared and then the overall data were compared to the previous survey in 2005 using the chi-square test. Survival analysis was used to compare breastfeeding cessation differences between the two surveys. To estimate the proportion of bed-sharing in the non-participants, the observed number was extrapolated within socioeconomic categories and then summed to give an estimate of the number sleeping in their own bed. Division of this number by the number of births gave the population proportion.

The study received ethical approval from the Auckland Regional Ethics Committee and the Counties Manukau Clinical Board.

Results

Participants—Of the 734 eligible mothers, 315 were able to be contacted via telephone or home visit and of these, 16 declined to participate, leaving 299 (41%) of the cohort who participated. Of those who were not contactable 22% had an invalid telephone number or address, 66% continually did not answer their phone and 12% had babies who fell out of the age range during the contact period.

Non-participants—Those who participated in the study were compared with the non-contactable/declined families. Information on geographical location, maternal age, maternal smoking, parity, infant birth weight and gestation was available for the non-participant group. Non-participating mothers were more likely to be smokers

($p=0.004$), to be multiparous ($p=0.04$) and were of lower socioeconomic status ($p=0.006$) than the participants. This difference may have some influence on the estimates derived from the survey, in particular, bed-sharing. In the non-participants this was estimated using geocodes and smoking status, and there was little difference between the participants and the non-participants for either analysis.

Participant demographics—There were no significant differences between the 6-8 week ($n=123$) and the 3-4 month ($n=176$) aged infant groups for any of the variables studied and, as in the 2005 survey, the results were pooled.

The Māori mothers were younger (26 years, SD 6.5) than the NWH mothers (33 years, SD 5.1). Eighteen percent (1% NWH) were under the age of 20 and 26% (5% NWH) were between 20–24 years of age. Thirty-four percent (48% NWH) were first time mothers. The mean birth weight of the infants was 3362g (3413g, NWH) and 9% (12% NWH) were preterm.

Table 1. SIDS prevention factors cited by the mother

SIDS prevention factor	CM Survey (n=299) n (%)	NWH Survey (n=278) n (%)	P value
Sleep baby on back* †	206 (68.9)	234 (84.2)	<0.0001
Don't smoke during pregnancy or around baby* †	76 (25.4)	202 (72.7)	<0.0001
Avoid bed sharing during sleep* †	102 (34.1)	128 (46.0)	0.004
Breastfeed †	12 (4.0)	96 (34.5)	<0.0001
Keep soft objects/loose bedding out of the cot; keep face clear*	129 (43.1)	77 (27.7)	<0.0001
Avoid overheating*	11 (3.7)	74 (26.6)	<0.0001
Use a firm sleep surface*	9 (3.0)	47 (16.9)	<0.0001
Use a pacifier at nap time and bedtime*	5 (1.7)	10 (3.6)	0.19
Sleep in same room as parent* †	14 (4.7)	4 (1.4)	0.03
Avoid using secondhand crib mattresses	0 (0.0)	26 (9.4)	<0.0001
Other, e.g. avoid alcohol/drugs around baby, wrap mattress in plastic, use natural fibres, use clean bedding, aired sleeping space, new mattress, feet at end, wind well, etc.	76 (25.4)	67 (24.1)	0.77
Wrong answer, e.g. side or prone sleeping	1 (5.0)	7 (2.5)	0.13
No risk factors known or listed	35 (11.7)	24 (8.6)	0.27

* AAP guidelines 2005 † NZ SUDI prevention guidelines 2008.

SIDS prevention knowledge (Table 1)—The most common SIDS prevention factor, cited by 69% of the mothers (84% NWH), was to sleep baby on its back. Smoking in pregnancy was mentioned as a risk factor by only 25% of mothers (73% NWH, $p<0.0001$). As the source of information, 72% of participants cited the midwife (54% NWH) while 56% cited Plunket (27% NWH). Only 6% (40% NWH) of the surveyed population said information came from an antenatal class. Eighty-three percent (70% NWH) however, reported receiving a pamphlet about SIDS prevention from the midwife, Plunket or the hospital ($p=0.0002$).

Table 2. Position or positions in which baby placed to sleep

Sleep position	CM Survey (n=299) n (%)	NWH Survey (n=278) n (%)	P value
Last night			
Back only	210 (71.0)	201 (72.3)	0.65
Side only	56 (18.9)	39 (14.0)	0.14
Front only	18 (6.1)	4 (1.4)	0.004
Side & back	9 (3.0)	34 (12.2)	<0.0001
Front +back	1 (0.3)		
Back+side+front	2 (0.7)		
Usually			
Back	170 (56.9)	180 (64.8)	0.06
Side	42 (14.1)	29 (10.4)	0.21
Front	13 (4.3)	8 (2.9)	0.30
Side & back	48 (16.0)	61(21.9)	0.08
Front +back	11 (3.7)		
Back+side+front	9 (3.0)		
Side+front	6 (2.0)		

Sleep position (Table 2)—The “front only” sleeping position was much more prevalent among Māori (6.1%) than European (1.4%) in the ‘last night’ category than in the ‘usually’ category (4 % CM vs 3%NWH). Overall, 13% (3% NWH) ‘usually’ slept their infants in some combination of sleep positions that included front. The prevalence of ‘usually’ slept on the side, on the side and back but not the front and the back only positions were similar between groups.

Eighty-five percent of mothers choosing the unsafe side and prone positions gave “baby sleeps better” as the reason. “Safety” (68%) and “recommended by health professional” (28%) were important reasons for the back position. Those who slept baby on the side plus on the back did so for “better sleep” (63%), “safety” (42%) and “head shape concerns” (27%).

Unexpectedly, 27% of mothers who had cited back sleeping as a preventive factor for SIDS did not sleep the infant on the back. Overall, there were few (n=7) concerns expressed about the choice of sleep position.

Table 3. What bed does baby sleep in?

Bed	CM survey	NWH Survey	CM survey	NWH Survey
	Last night n (%)	Last night n (%)	Usually n (%)	Usually n (%)
Own bed	254 (85.8)	228 (82.3)	244 (81.6)	233 (83.8)
Parental bed	27 (9.1)	29 (10.5)	24 (8.0)	24 (8.6)
Both own+parental	13 (4.4)	18 (6.5)	28 (9.4)	18 (6.5)
Other shared	2 (0.7)	2 (0.7)	3 (1.0)	2 (0.7)

Table 4. How long did baby share a bed last night?

Time	CM survey (n=194)	NWH survey (n=77)
	n (%)	n (%)
<2 hours	118 (60.8)	33 (42.9)
2–5 hours	38 (19.6)	13 (16.9)
>5 hours	38 (19.6)	31 (40.3)

Bed sharing/co-sleeping (Table 3 and 4)—In response to the question “What bed does your baby sleep in?” most infants in this survey slept in their own bed ‘last night’ (86%) and ‘usually’ (82%), but nearly one fifth usually co-slept for some or all of the night. This is similar to the NWH survey.

However, when enquiring in a different fashion, i.e. “If baby shared a bed last night, how long did they share for?” 65% of mothers (194 of the 299) indicated some bed sharing (NWH 27%) and thirty-nine percent of those (57% NWH) shared for >2 hours.

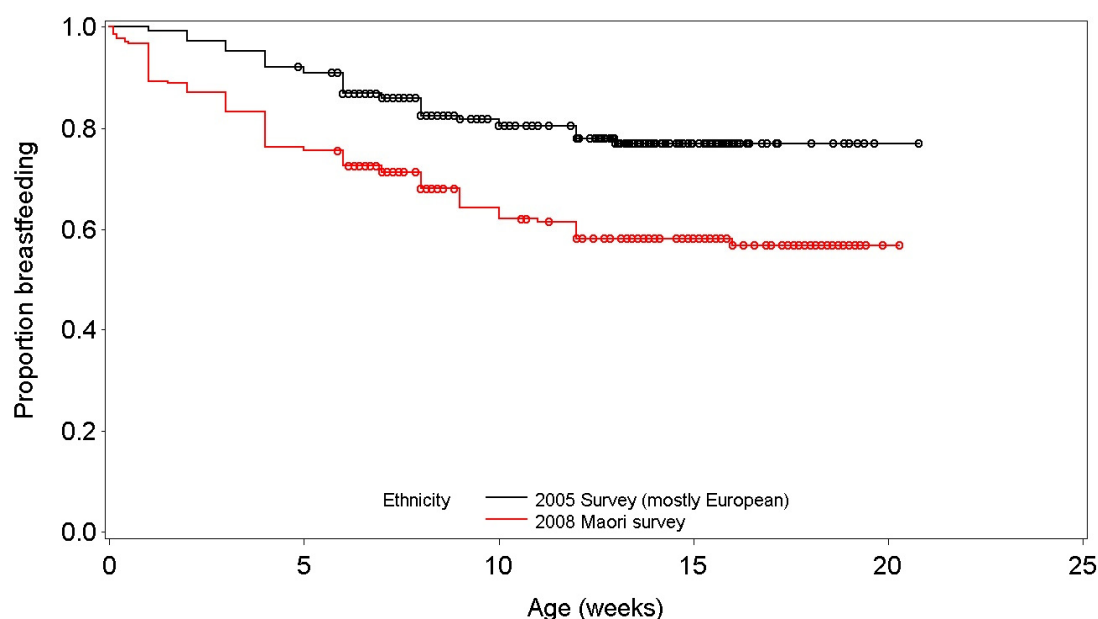
Reasons given for sharing a bed >5 hours varied as follows: “prefer closeness” (42%), “for breastfeeding” (29%), “baby sleeps better” (21%), “can keep an eye on baby” (18%), “for short naps or settling” (11%), and “for cuddles/play/bonding” (8%). For mothers in Table 3 who reported usually participating in some bed-sharing, 87% had no concerns, but 9% expressed concerns about the safety of doing so.

Smoking—In pregnancy, 53% of mothers had smoked (8% NWH), with a mean of 8 (SD 5.6) cigarettes per day. In the last 24 hours, 51% had smoked. The reported maternal smoking in the Māori mothers was identical to that of Māori women in the NZ Tobacco Use Survey, 2005,¹¹ but the much lower rate reported for European mothers in the 2005 survey was markedly below the known 19% prevalence.¹¹ In other words, European mothers either did not report their smoking in pregnancy or stopped smoking. Māori did not. Worse, 21% of mothers (1% NWH) both smoked in pregnancy and ‘sometimes’ or ‘always’ co-slept with their infant.

Breastfeeding—Mothers who reported ever breastfeeding their infants comprised 91%, (97% NWH) although only 74% of 6–8 week infants and 51% of 3–4 month infants were still breastfeeding at the time of the survey. Survival curve analysis of the time of breastfeeding cessation showed that Māori mothers stopped breastfeeding significantly earlier than the 2005 survey mothers ($p<0.0001$) (Figure 1).

When compared with the 2005 survey, Cox regression analysis of other factors associated with earlier cessation of breastfeeding was significant for mothers aged under 20 ($p=0.04$), maternal smoking during pregnancy ($p=0.005$), and the use of a pacifier ($p=0.0002$). Bed sharing was not associated with breastfeeding cessation.

Figure 1. Breastfeeding cessation survival curve analysis: Māori survey compared with 2005 survey



Positioning devices—While 46% of mothers (32% NWH) used a positioning system of some sort, only a few (10%) were of a commercial variety, and 36% of Māori infants had an unsafe homemade positioning system such as a pillow, rolled blanket or tight wrapping. The main reasons for these included “keep baby positioned”, “safety” and “help baby feel secure”. Very few mothers had any concerns about positioning systems.

Discussion

This survey has established for Māori mothers some previously unknown points regarding SIDS related knowledge and infant care practices. It has established the prevalence of Māori infant co-sleeping where there was smoking in pregnancy (21%), an extremely high-risk practice, with a greatly increased SIDS risk, particularly in younger infants,¹² with odds ratios ranging from 5 to 29.¹³ Habitual prone sleeping (13%) and the presence of soft objects in the sleeping environment (36%) have been clearly demonstrated. These are the most commonly reported risk related occurrences in SIDS deaths.⁴

The survey has also highlighted important differences between Māori and European women and because the European study data is only 3 years older than the present Māori study data, there seems little to preclude such a comparison.

Secondly, it seems that these behaviours may well be related to the reported poor knowledge of SIDS related information among Māori mothers. The effectiveness of the national SIDS-related health promotion programme and the relevance of its

messages for the known high risk group in New Zealand are therefore bought into question.

The early cessation of breastfeeding among Māori mothers and the poor awareness of smoking as a SIDS risk factors are outstanding examples of this. Lastly, we found that participants were far more likely to have heard the information that they did know from a midwife, from Plunket or from the hospital rather than from an antenatal class and this fits well with the known low attendance of antenatal class by Māori women.¹⁴ It seems therefore that both the currently mandated formats of imparting infant care related health promotion messages fail Māori mothers.

Current smoking cessation programmes are not adequately meeting the needs of Māori women, particularly those who are pregnant¹⁵—this is despite a recent survey by Wilson et al showing that 85% of Māori smokers wished they had never started smoking.¹⁶ Action to urgently support Māori smoking cessation in pregnancy was called for in 2003,¹⁷ but no Māori oriented action has eventuated.

Stuck in the old public health mode of ‘providing equitably for everyone’, we have been unable to grasp the arguably more effective approach of dealing directly with the preventive health needs of the high risk Māori community. In addition, safe sleeping environments messages have revolved around the ‘don’t bedshare’ approach and those at highest risk among this Māori group have rejected this.⁸

Māori messages need to gain priority. Indeed, a Māori community promoted safe sleeping environment, the wahakura (a woven flax bassinet capable of being taken into the shared bed) takes an alternate approach of attempting to make the bed-sharing/co-sleeping environment more safe.¹⁸ Notably, two of the three recommendations of the recent 2009 Child and Youth Mortality Review Committee’s Fifth Report to the Minister of Health are about smoking in pregnancy and safe sleeping environments—particularly pertinent to Māori infants.⁴

Participation in this survey has been smaller than desired—but 315 of the potential cohort of 734 were unable to be contacted and transience of members of the lower socioeconomic communities explains this. On the other hand, the 95.5% participation by those able to be contacted, speaks for the success of the sampling strategy, that is, contact by researchers of the same sex and same ethnicity with follow-up by home visiting. Notwithstanding the participation rate of only 41%, the extrapolation analysis from the available data of those non-contactable, reassures us that we have valid data overall. The number of invalid phone numbers again attests to the transiency of residence in this socioeconomic group. Increasing the recruitment would demand a strategy where the research was seen to have arisen from and to be based in the community of interest.

Conclusions

Despite limitations, this study has highlighted important information about the current state of knowledge among Māori mothers about child care practices and the prevalence of and the reasons for using such practices. The challenge now is to develop health promotion tools that are appropriate in this community and that might improve knowledge and therefore change behaviour, particularly with regard to

smoking cessation, safe sleep position, safe sleeping environments, and duration of breastfeeding.

Competing interests: None.

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