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This report and the work it describes are dedicated to those who have suffered as a result of the Christchurch earthquakes.

Abstract

Aim: To describe how recipients of protected sleeping spaces for babies (pēpi-pods) received and used these devices, offered as an emergency baby bed following the 22 February, 2011 earthquake in Christchurch, New Zealand.

Method: The pēpi-pod package was quickly assembled as an emergency response to the increased risks to babies, posed by disrupted living and sleeping conditions in families following the Christchurch earthquakes, and as support for their fearful parents. The initiative attracted national media attention and public support from health leaders, which facilitated awareness amongst professionals and demand by families. A 'door to door' blitz distribution in the eastern suburbs of the city offered easy access to those most in need. A lead agency coordinated training, communication, supply and demand. A sub-group of recipients was invited to give feedback on usage via an online or telephone survey.

Results: There were 642 pēpi-pods distributed in Christchurch between 22nd March and 31st July, 2011, and a sub-group of 139 recipient families were invited to complete the survey. Responses were received from 100 (72%) during September 2011. A third of babies using pēpi-pods were Maori or Pacific (35%), a third were exposed to smoking at home (30%), and nearly half were younger than 4 months (45%) at the time of the survey. Many had parents who used Community Services cards (59%) and half were the mother's first child (55%). Families reported being thoroughly briefed when they got their pods, across all six topics, from 94% for 'making up the pod' to 73% for 'who needs one and why'. Most respondents (82%) gave 'earthquake concerns' as a reason for wanting a pēpi-pod, and included as risk factors for their baby: smoking in pregnancy (26%), bed sharing (41%) and prematurity or low birth weight (11%). Most babies got their pods before they were 4 weeks old (70%), used them beyond 8 weeks of age (70%), and 28% were still in use at the time of the survey. Pēpi-pods were used as instructed with 44% of babies using them for all or most sleeps and in a variety of places that included beds (89%), couches (35%) and floors (33%). When used for 'same bed' co-sleeping (87%) the pod was placed on the base sheet of the adult bed (79%), or on top of covers (13%), and adult covers were well clear of a baby's face (95%). Most used the wrap around sheet (88%) and merino wool blanket (90%) that came with the pēpi-pod. No accidents were reported. Most babies (87%) were, or would be, using cots when they

stopped using pēpi-pods. Features most appreciated by families were ‘having baby close by’ (90%), ‘peace of mind with the earthquakes’ (88%), ‘easy to move about’ (74%) and ‘safer bed sharing’ (62%). Its value was rated highly by users, at 7, 8 or 9 out of 9 for 91%. A snap shot of infant care ‘yesterday’ and ‘last night’ identified age-appropriate care of babies during sleep in 96% of cases.

Conclusion: Pēpi-pods provided a protected space for babies when they were ‘same bed’ co-sleeping, and peace of mind for their parents in frightening times. They were widely and appropriately used, enhanced closeness and safety, and were rated highly by users. The complete package of ‘protected sleeping space plus education’ could be considered, in ordinary times, for protecting more vulnerable babies from sudden infant death when ‘same-bed’ co-sleeping.

Introduction

There is a compelling need for babies to be close to their parents. Co-sleeping is one way that parents meet this need. The practice has many forms, has benefits for breastfeeding and attachment (McKenna, 2005; Blair, 2010), and is common in many cultures and countries. When practiced as ‘same room’ co-sleeping it is associated with protection against sudden infant death (Carpenter, 2004), but when practiced as ‘same bed’ co-sleeping (babies sharing the same bed or sleeping surface as others), there is evidence of increased risk for some babies (Scragg, 1985; Carpenter, 2004).

These ‘more vulnerable’ babies are mostly babies exposed to smoking, especially in pregnancy, born before 36 weeks gestation, weighing less than 2500 grams at birth, or where alcohol or drugs have been used by the co-sleeping adults. A small increased risk of sudden infant death for younger babies (less than 3 months) has been reported, although experts debate the evidence for an elevated risk to babies generally (Vennemann, 2012). A US Task Force on Sudden Infant Death Syndrome has recently published an updated review of evidence of risk factors (2011).

Sudden infant death continues to claim 60-70 babies every year in New Zealand (CYMRC, 2009). The rapid fall in incidence from the mid 1980’s continues its downward trend, but has slowed considerably. Most deaths are now considered

preventable if the developmentally appropriate conditions are applied: face-up, face clear, smokefree, and in own baby bed if more vulnerable. Protection can be enhanced further by breastfeeding, 'same room, but not same bed' co-sleeping and pacifier use.

The need to be close to one's children took on a whole new meaning for parents following the Christchurch earthquake of 22 Feb, 2011. There were public health concerns for the lives of babies from an increase in unsafe conditions, in particular, from 'same bed' co-sleeping, as a response to the frightening and uncertain times. The New Zealand community was mobilised to supply protected sleeping spaces as support for earthquake parents and protection for their babies.

The aim of this paper is to report the feedback from a sub-group of parents on their experience of getting and using a pēpi-pod, as well as their infant care practices of 'yesterday'. Specifically, the study aims to answer three questions:

1. Were pēpi-pods acceptable to those who received them?
2. Were they used as instructed to increase protection for babies?
3. How did parents in the study group care for their babies 'yesterday' and 'last night'?

Method

Development: The pēpi-pod initiative was in development during 2010 as a safety option for more vulnerable babies when they sleep in settings known to increase the risk of accidental suffocation. It was developing as 'a sister' to the wahakura, a hand woven flax version of a protected sleeping space that is promoted in Maori communities. There was a recognised need for a low-cost and readily available option to complement wahakura and reach more babies. The concept was that if your baby is more vulnerable, and you don't have a wahakura, then you need a pēpi-pod, or similar device.

The Christchurch earthquakes propelled the initiative into implementation. A health funded group acted as lead agency for coordinating all aspects of the initiative including: sourcing, storing and preparing materials, negotiating cost reductions on goods and services, supporting networks of volunteers to sew covers and bedding

items, communicating with all parties involved, developing education and training materials, assembling the package, and establishing processes for referral, distribution and feedback.

Device: The base device was a general purpose polypropylene, under the bed storage box sized 76 cm long x 36 cm wide x 12cm deep and supplied without the removable parts of lid, handles and rollers. The box was transformed into an infant bed by adding an attractive cover and a 2.5 cm upholstery-density, fabric-covered, tight-fitting foam mattress.

Bedding packs were assembled from items made by volunteers, supplied as donations or supplied at reduced cost. These were supplemented as necessary to provide as a set: one mattress protector, one base slip-on sheet, one wrap around sheet (160 cm x 60 cm made up), with a 10 cm deep sewn-down 'turn-back' at the top edge, and a double layer merino wool blanket (120 cm x 60 cm made up). The ideal was to supply two sheet sets per bedding pack and this happened as stocks allowed.

Promotion: There was little active promotion of pēpi-pods other than by word of mouth, targeted promotion to participants of a smokefree pregnancy programme, and a two day blitz in the suburbs of Linwood and Aranui. These were suburbs most disrupted by the earthquakes. Radio announcements and a mail drop to households advised of dates and pick-up locations in the areas, and a team went house to house down key streets in each suburb offering pēpi-pods to families with young babies.

People were also alerted to the availability of pēpi-pods through media exposure on television, radio and Facebook, and in newspapers. A dedicated website was set up to direct health professionals, community agencies, sewing networks and families to the information most relevant to them. It was updated with photographs, news of sewing bees and progress towards a goal of 1000 covers.

Referrals and distribution: A referral process was posted on the pēpi-pod website as well as the website of a partner agency providing a smokefree pregnancy support service. Referral criteria were extended to include 'earthquake related concerns' as well as the evidence-based factors of smoking in pregnancy, prematurity and low

birth weight. Requests could be made by telephone, email or website either directly by families, or through a health or community worker.

A small number of agencies working closely with more vulnerable populations were supported with a simple training process and materials, and set-up as authorised distributors within their service networks. Pēpi-pods were either collected from these partner agencies or delivered to people in hospital or at home.

Education materials: Education materials were developed for users and distributors. A DLE sized rack card carried on one side, an image of a baby, on her back, sleeping between two parents in a pēpi-pod, the pod positioned so that adult covers were well clear of her upper body and face. There was also a simple rhyme describing the 'rules of protection' that accompany the device. The reverse side of the rack card was written as a guide for discussing the rationale for the device and when, where, how, why and with whom they were to be used.

A sticker with the same image and rhyme was attached to the pod to brand it as a protected sleeping space for babies should it be passed to other families. To personalise the support, a small card was attached to the bedding pack. Headed *'made for you with love by ... of ...'* the card identified, by their first name, the person who had made the cover and where they were from.

Guidelines for authorised distributors were produced to standardise the distribution process and the content of the fifteen minute safety briefing for parents. The distributors' training process involved completing a pre-existing fifteen minute on line education programme on preventing sudden infant death and a 30 minute face to face session with a facilitator from the lead agency to orientate distributors to the guidelines. These covered the safety features of the pēpi-pod, the content of the safety briefing, skill practice and data collection requirements.

Safety briefing: The process was: assemble the pod, brief the family, and complete the paper work. A doll was used to demonstrate suffocation risk and as a model in the pod. The briefing included a set of topics that explained: the reason for supplying pēpi-pods, how sleep position affects breathing, which babies are more vulnerable and why, rules of protection, safety features of the device and a demonstration of

how to make it up, how to use it to help babies settle for sleep, and its safe placement.

Pēpi-pods were not free; in exchange for the pod parents were asked to help spread the education that they had received to family and friends. Minimum demographic and personal contact data were collected to monitor distribution. Where a baby was present for the briefing it was encouraged that the baby be used to demonstrate how features of the pēpi-pod can support settling.

Feedback: An online form was designed using Acclipse software as a closed survey available only to those who received the email link. The anonymous and confidential survey was in four parts and asked about the respondent's experience of getting a pēpi-pod, how it was used, what was 'usual care' for baby 'yesterday' and household information.

Respondents were able to review and change their answers before submitting the survey. Email addresses were asked for as a way to check for authenticity of respondents and duplicate entries. Invitations to complete the survey were made by telephone to people who received their pēpi-pods from the lead agency and could be completed on line or via telephone.

Analysis: Survey data were analysed by frequency distribution using MS Excel. Percentages were of the total number of respondents. The Chi squared test for significance was used and findings were considered statistically significant for $p < 0.05$. A thematic analysis of text responses was made using the 'find' feature of MS Word to highlight key words associated with themes.

Results

From 642 pēpi-pods distributed in Christchurch between 22nd March and 31st July, 2011, 139 recipient families were invited to give feedback and 100 (72%) people responded. Most (90%) submitted an online response and 10 giving their responses over the telephone. Most respondents were the mother of the baby (83%) and still living in Christchurch (94%), and 72% had finished using their pods at the time of the survey. Baby and family characteristics are summarised on Table 1.

Characteristics of babies: One third (34%) of pēpi-pods were used by babies considered 'more vulnerable' to sudden infant death, due to being smoke-exposed in pregnancy (26%), born before 36 weeks gestation (10%), and weighing less than 2500 grams at birth (9%). Half of babies were four months or older (54%) at the time of the survey, were girls (52%) and their mothers' first born child (55%), and a third were of Maori or Pacific ethnicity (35%).

Characteristics of households: Houses had been 'badly or 'quite badly' damaged in the earthquake for 23 % of families and the same number had moved house at least once since their babies were born (23%). It was common for parents to hold a community services card (59%) and there was a concerning amount of smoking in households (30%). Smoking by babies' mothers had reduced over time from 36% smoking before pregnancy, 24% during pregnancy to 20% smoking at the time of the survey. Daily use of alcohol was uncommon (2%), but regular use of drugs or medication was more so (13%). A fifth of babies lived in households with 3 or more adults (22%) or 3 or more children (18%). The age of babies' mothers ranged from 15 to more than 40 years with 23% aged less than 25 years. Most respondents (90%) had had a health professional discuss safe sleep for babies at some time in the past

Getting a pēpi-pod: People heard about pēpi-pods, most commonly from health professionals (48%). Awareness also came from family (28%), as well as media and internet sources (20%). 'Earthquake concerns' was given as by far the main reason for wanting one (82%), although 'cot death concerns' were also acknowledged by some (30%). Very few families had no bed for their baby (3%). Results for 'getting a pēpi-pod' are summarised on Table 2.

Most collected their pēpi-pod from a distributing agency (71%), and in answer to the question "*What were you told at the time?*" one person reported they were not told anything. Most, however, reported having received a thorough safety briefing across all key topics, from 'making up the pēpi-pod' (94%) and 'how sleep position affects breathing' (92%), to 'safe places to put it' (85%) and 'rules of protection' (83%), and 'support with settling' (77%) and 'who needs one and why' (73%). The briefing process developed over time from sensing what was most useful to parents. In particular, using the pod to help settle babies was a topic that gathered value from

success with settling babies during briefing sessions. Usually, babies' mothers received this briefing, but sometimes it was fathers (11%) and grandparents (5%).

Pēpi-pods were designed for use from birth to enable babies and families to develop safe habits and maximise protection opportunities in the first weeks. While the early pods were given to babies as old as 4 months, increasingly, babies were unborn or aged less than one week when families got their pēpi-pods (39%), with a total 70% receiving their pod before their baby was 4 weeks old.

Respondents were asked to identify from a list, those risk factors that applied to their baby before getting a pēpi-pod, and results for smoking in pregnancy, prematurity and low birth weight are reported above. These factors defined a group of babies (34%) who were 'more vulnerable' to sudden infant death. Other risks identified were 'earthquake related' for 49% of babies, and 'same-bed co-sleeping' (or bed sharing) for 41%. Although 13% reported regular use of drugs or medication in babies' households, this was not considered a risk factor for their babies in this analysis.

Spreading information: The principle of reciprocity was important to the design of the pēpi-pod approach. It was not intended to be a free baby bed for poor families, but a health intervention to protect infant life. Central to receiving one was an expectation that, in exchange for the pod, recipients would share what they had learned in the briefing session with people in their networks, especially anyone who may play a part in caring for their baby. As with briefing topics, this became more systematic over time and not everyone at the start may have been encouraged to help spread the education. Regardless, a minimum 353 'others' were engaged in conversations about safe sleep for babies from within recipients' social networks, an average of 3.5 others per pod recipient. Mostly, the mechanism for spreading information was 'talking' for (90%), and internet forms of communication, including Facebook, were used by 30%.

Using pēpi-pods: Pēpi-pods were used widely in same-bed co sleeping situations (87%). They were used for all or most sleeps in 43% of cases and at any time, (night, day or when away from home), for 62%. A quarter used the pēpi-pod only at night. The most usual place to put the pēpi-pod when baby was sleeping in it, was on a bed (89%), but they were also put on couches (35%) or the floor (35%) and 12% reported

putting them on tables or benches. Most used the two bedding items asked about; the merino wool blanket (90%) and wrap around sheet (88%). Usage results are presented on Table 3.

When used in an adult bed, pēpi-pods were mostly used as instructed. They were placed on the bottom sheet or mattress (79%), and adult covers were well clear of babies' faces (from the waist down for 65 of the 69 pods placed in this way). Some were placed on top of adult covers (11) with no part of baby covered by adult covers. Pod placement for a small number of babies was not as instructed. For six babies, pēpi-pods were placed on pillows. For 3 of these babies, the adult covers were reported to be at the level of babies' necks rather than well clear of babies' faces.

Assessing duration of use involved combining information for past and current users to find out how many babies, overall, were sleeping in pēpi-pods when they were 8 or 12 weeks old. Babies of 47 past users and 23 current users were still sleeping in pēpi-pods when they were 8 weeks old (70%). Similarly, 24 past users and 12 current users were still using pods for babies aged 12 weeks old (36%). It is estimated that duration of use for most babies was between 8 and 12 weeks, and beyond 4 months for a few (15%).

Accidents: Respondents were asked to identify from a list any accidents, breakages, near misses or concerns about safety that they experienced while using the pēpi-pod. There were no reported accidents when babies were in pēpi-pods, although there were three incidents: one mattress went mouldy, a pod cracked around the moulded handle area, and something fell into a pod. There were reports of concern caused by toddlers (7) and pets (4), but nothing eventuated.

Features appreciated: Users rated the overall value of the pēpi-pod highly, with 91% giving it a 7, 8 or 9 out of 9 rating. The following question was asked to assess specific areas of usefulness: *'Pēpi-pods are new. People like different things about them. From the list below, which apply to you?'* The features most appreciated were that the pēpi-pod enabled parents to 'keep their babies close by' (90%) and have 'peace of mind with the earthquakes' (82%). To a lesser degree, support with infant care, in terms of 'safer bed sharing' (62%) and 'help with settling' (30%), were also appreciated. Practical aspects of 'easy to move around' (74%), 'came with its own bedding' (49%) and 'easy to clean' (35%) had value, too.

Thirty-seven people added a comment on their experience using pēpi-pods and others commented at other opportunities through the survey. Comments were mostly positive, expressing appreciation of the closeness, peace of mind, practical support, safety and age-appropriate care that the pēpi-pod enabled. Some comments were about the size of the pēpi-pod ('too small for a large baby' or 'takes up too much space in the bed'), or were explanations of personal circumstances preventing use in 'same bed' co-sleeping situations. Comments are listed by theme in Table 4 and an example is given below.

"Due to the earthquakes I could settle baby to sleep and take the pēpi-pod from room to room with me which gave me peace of mind. I could have the baby in my room even though our room is small and we could not fit the cot in it. Also it meant that due to the frequent waking of baby I could attend to his needs quickly, even in the middle of the night, as he was always close to me."

(Māori mother of a 10 week old baby)

After the pēpi-pod: Past users were asked why they stopped using the pēpi-pod, where their babies sleep now and what they have done with their pods. Current users were asked for their intentions about 'sleeping place' and 'use of pod' when baby stops sleeping in it. Except for 'reason for stopping', results for past and current users were combined. The main reasons for ceasing to use the pēpi-pod were that baby got too big (43%) or was now settling well in a cot or bassinet (34%). 'Beginning to roll' (6) and 'less worried about aftershocks' (5) were also given as reasons. Most babies had or would transfer to sleeping in a cot (87%) and a few to 'same bed' co-sleeping, at least on occasions (13%). A third intended to keep their pēpi-pod for a next baby (36%), pass it to another baby (29%), or had not yet decided (30%).

Infant care yesterday: Questions were asked about what happened 'yesterday' and 'last night' to give a snapshot of general infant care received by babies in the study group. Common practices were: placing babies on the back to sleep (91%), time on the tummy when awake (89%), bed covers firmly tucked or no covers (83%), some breastfeeding (72%) and 'same room' co-sleeping (71%). Less common were: exclusive breastfeeding (43%), time propped (on pillows, tri-pillows or couches) (45%), being swaddled for sleep (40%) and 'same bed' co-sleeping (33%). Uncommon practices were: time in a front pack (28%), no breastfeeding (27%), use of a pacifier

when sleeping (25%) and unprotected 'same-bed' co-sleeping (26%). More than a quarter (28%) of babies had, at some time in the past, taken medication for colic or reflux. Infant care results are summarised on Table 5.

Variations in usage by risk status:

Protected sleeping spaces were intended to protect more vulnerable babies from accidental suffocation in settings that increase suffocation risk. They were not for all babies. However, earthquake related concerns brought a new group of babies into temporary vulnerability. Data were analysed by vulnerability status to identify any variations in use between more and less vulnerable groups. More vulnerable was defined as 'any smoking in pregnancy', 'born before 36 weeks gestation' and 'weighing less than 2500 grams at birth'. Earthquake related risks and 'same bed' co-sleeping were not included as factors of increased vulnerability in this analysis.

There were few differences between the two groups in terms of getting their pēpi-pods and how they were used. Families with more vulnerable babies were more likely to have their pēpi-pod dropped off to them (56% vs 15%) and there was a tendency for them to value 'helps with settling' (38% vs 26%), and to hear about pēpi-pods from health professionals (65% vs 39%), more than families with less vulnerable babies. Otherwise, the two groups were similar in terms of their briefing experience, how the device was used, features appreciated, their co-sleeping practices and the overall rating of value.

There were variations in socio-economic factors between the two groups, which were expected given that social disadvantage is part of a 'high risk' profile for babies. Compared to less vulnerable babies, those more vulnerable lived in households with more adults and more children, where more people smoked, where more parents held a community services card, where mothers were younger, and more vulnerable babies were more likely to be identified as Maori or Pacific .

Variations in infant care practices by age of baby: Because sudden infant death is more common for babies under 4 months of age, and infant care practices change with age, the results of the snapshot of infant care were broken down by age of baby. Babies were grouped as younger than 4 months (45%), or 4 or more months (55%) at the time of the survey (median age 18.6 weeks, range 3-327 days). As

expected, more of the younger babies were exclusively breastfed, and slept for fewer hours 'last night'. There were no differences between age groups for: sleep position, pacifier use, 'same room' co-sleeping and firm tucking of, or no, covers. Compared to older babies, more younger babies were swaddled (51.1% vs 30.9%) or carried in front packs (31.1% vs 25.5%) 'yesterday'. Fewer had time on their tummies when awake (82.2% vs 94.5%), time propped on pillows, tri-pillows or couches (33.3% vs 50.9%), and fewer were 'same bed' co-sleeping (28.9% vs 36.4%) 'last night'.

There were 33 babies who were 'same bed' co-sleeping 'last night', 14 for all of the night and 19 for some of the night. Four were also in a pēpi-pod, 3 for all the night and 1 for some of the night. Data were examined further to understand the characteristics of the 29 'same-bed' co-sleepers 'last night' who were not also in a pēpi-pod, in order to assess the extent of exposure to increased risk of sudden infant death 'last night' for this group of babies. Findings suggest that exposure to risk was low for 28 of the 29 who were either older babies or in the less vulnerable group.

One baby was exposed to a set of conditions 'last night' considered to be unsafe. He was 12 weeks old, smoke-exposed in pregnancy, same bed co-sleeping for all of the night and not in a pēpi-pod, despite currently using one by day. Protective factors in the set of conditions were: exclusive breastfeeding, back positioning, dummy use and not swaddled, as well as being born at term and of normal birth weight.

Same bed co-sleeping 'last night' and not in a pēpi-pod was significantly more likely for babies exposed to same bed co-sleeping before they got a pod (18 of 41 (44%) previously exposed babies compared to 11 of 59 (19%) who were not (Chi squared = 6.319, D.F. = 1, $p < 0.05$).

Discussion

Ordinary times can be the obstacle most in the way of innovation and the pursuit of change. Process and protocol govern our everyday lives until disaster strikes and we must act quickly with what we know and what we have. As a health system, we respond to the persisting rates of sudden infant death with 'ordinary time' thinking, methods, expectations and timeframes. The pēpi-pod project is an example of 'crisis time' thinking applied to an 'ordinary time' issue, the sudden death of babies as they sleep. This report describes a programme of providing protected sleeping spaces for

babies, implemented as an emergency response to preventing a spike in sudden infant deaths in the aftermath of the February 2011 Christchurch earthquake.

The intervention met its aims for families in the study group. Protected sleeping spaces for babies, in the form of pēpi-pods, were highly acceptable to, and appropriately used by, the recipient families who completed the feedback survey. Infant care 'yesterday' was age-appropriate for 96% of babies, in terms of sleep related practices, and just one baby was in a potentially high risk situation 'last night', but with several protective conditions mitigating risk. Fears about accidents and ventilation of mattresses were unfounded, with no reported accidents and just one mouldy mattress.

Results have their meaning within the context and limitations of this report and cannot be generalised to ordinary times, other populations or different conditions. Yet it is important to describe innovative health practices as fully and early as possible, as a platform for discussing, learning and designing similar or different approaches. For this reason, we have reported in detail the methods of the project and results of the user feedback survey. We have done so with full awareness of the limitations of this evaluation, in terms of sampling and method, due to constraints on resourcing and time.

Earthquake factor: The earthquake experience drove demand for pēpi-pods and drew a low risk group of babies into a potentially high risk situation of 'same bed' co-sleeping with parents, increasing overall prevalence of the practice to 87% in the study group. There were anecdotal reports of siblings and even pets sharing parental beds, as well as babies, and of babies thrown from bassinets. Also, on-going aftershocks were likely to have influenced patterns of use, such as 'same room' proximity to baby, resulting in the high ranking (74%) for the associated value of 'portability' of the pod. These levels of demand and need for portability may not be as high in an 'ordinary time' context.

Appropriate babies: The study group had increased representation from Maori, Pacific and low income users of pēpi-pods, for the Christchurch population. Follow-up of users was difficult enough for the lead agency and was not expected of partner agencies given the difficulties of life across the city. Had it been possible for Maori and Pacific agencies and early intervention programmes to participate in the usage

survey there would have been increased representation of more vulnerable babies and this is a limitation of the findings. However, it is worth noting that pēpi-pod usage was similar across all groups in this study, and did not appear to be related to ethnicity or family income.

Smoking: There was good representation of smoke-exposed babies since pēpi-pods were targeted to participants of a smokefree pregnancy service. There was no difference between smoking and smokefree women in pēpi-pod usage or infant care ‘yesterday’ or ‘last night’. Of interest was the degree of change in smoking for women in the survey from 36% for pre-pregnancy smoking, to 24% during pregnancy and 20% at the time of the survey. This was a 44% drop in smoking by mothers of pēpi-pod babies, and happened during a period of extreme stress. Smoking is currently the main preventable risk for sudden infant death in NZ (Mitchell, 2009). Pre-pregnancy smoking status gives a more realistic starting place for measuring changes to smoke exposure and vulnerability for babies. It should be asked about and considered in infant risk assessment generally.

Need to be close: The drive for a baby to be close and a parent to protect are primal, with or without a crisis. The ‘same bed’ co-sleeping debate pitches these two drives against each other. When ‘close’ means ‘touch’ for a baby, and comes with a need to be held, stroked or rocked, then *‘in a bassinet beside the parent’s bed’* will not be close enough for an unsettled baby to feel calmed in the night. Similarly, when harm may come in the form of toppling bassinets or falling debris, *‘in a bassinet beside the parent’s bed’* may not seem safe enough to a parent.

Parents have a dilemma at these times; to protect from imminent or actual distress, or physical danger, or to protect from potential and unlikely sudden infant death. High appreciation for the closeness (90%), peace of mind (82%) and safety (62%) that the pēpi-pod enabled in study families, suggests this dilemma was resolved and babies were able to be close and, in their parents’ assessment, also safe.

Health interventions have a responsibility to follow-through from informing about safe practice to enabling safe action. The recently released safe sleep recommendations of the American Academy of Pediatrics Task Force (2011) exclude ‘in the bed’ co-sleepers of any kind as there is no evidence that they are safe. It would be difficult to impose a ban on same bed co-sleeping. The risk benefit

analysis for more vulnerable babies, therefore, must be *'same bed co-sleeping with a pēpi-pod vs without'* rather than *'same bed co-sleeping with a pēpi-pod vs bassinet beside a parent's bed'*. The need is to increase protection for babies on those occasions when they **are** in the same bed as parents. As parents, we do not always have the luxury of proof of safety, or the time to wait for it. When death is the consequence of delay, there is a moral and ethical obligation to pursue solutions and not to block them.

Early access: Findings supported getting a pēpi-pod as early as possible. That 'same bed' co-sleeping 'last night' was significantly more common for babies for whom it was a risk factor at the start suggests the practice had been successful in meeting night-time needs in families. Success is strong motivation to continue a practice. Early access to a protected sleeping space for babies is likely to help with establishing safe sleeping practices from birth. Also, it would return a greater benefit as a prevention strategy, given that the period of risk for sudden infant death is moving towards younger aged babies, and use is size-limited. The device needs to be big enough to hold a baby through a period of peak risk (<12 weeks) yet small enough to fit in adult beds leaving room for adults to sleep. There was a tendency, although not significant, for early recipients to use their pods more often and more generally than those getting them one or more weeks after birth.

Bedding packs: The decision to supply bedding packs with pēpi-pods was made for several reasons. Firstly, pods were emergency beds. They needed to stand alone. They were for unplanned situations such as needing to leave quickly, move a sleeping baby out of harm's way, or bring a baby into a bed for settling, or in situations when no other baby bed option was available. Also, an infant sleeping environment is a set of conditions that interact to enhance or reduce safety during any one sleep, so care with choice and fit of bedding is part of the safety package. Findings support including bedding in the package, even though all but four families had their own baby beds and bedding. Most used the key items of wrap around sheet and merino wool blanket, and half gave 'came with own bedding' as a feature they liked. Study families received non-standard bedding packs. These became standardised over time as reliance on volunteers to sew and provide materials became untenable.

Safety briefing: It is likely that the fifteen minute safety briefing was a key factor in the high levels of appropriate use. It was a standard part of getting a pod so, that just one person reporting she was ‘not told anything’, was evidence that process had been followed. Also reassuring was the high level of acknowledgement for the various topics covered in the briefing, especially the demonstration of making up the pod. Information was sharply focused on preventing accidental suffocation of babies during sleep. The briefing formality was a critical aspect of design as was the expectation that recipients pass what they had been told to others. That 97% did, highlights the potential influence of this network of families and their willingness to participate in scaling the protection effort.

Settling: Social marketing practice considers the ‘hot’ and ‘cold’ self whereby a person knows what is safe or right, but in the heat of the moment or when under pressure, acts in a risk-taking way. Evidence from sudden infant death syndrome (SIDS) research has found a relationship between novel events and SIDS where ‘conditions were different’ for that sleep (Carpenter, 2004). Also, coroners have reported cases where parents knew the safe practice, but acted in unsafe ways in order to manage the needs of the moment, and babies died (Escott, 2009).

These findings were the rationale for including safe settling in the pēpi-pod briefing. Demonstrating how to combine the elements of effective settling, using the pēpi-pod, led to many babies actually falling asleep within the briefing. The findings of this study suggest that the pēpi-pod was used as an effective settling tool for some babies, with a third of families identifying this as a valued feature, and a third citing ‘settling well in bassinet or cot’ as their reason to stop using the pēpi-pod.

Safer sleep: It cannot be claimed from these data that pēpi-pods protected babies or protected lives, but it can be claimed that they protected the space in which babies slept. This is only part of the protection challenge. There are an estimated 500 sleep events per baby in the peak period of risk, (assuming six sleep episodes per baby, per day for 12 weeks). To protect babies, the safety conditions of ‘face-up, face clear, smokefree’ are required when babies sleep, as well as the protected space.

There were some babies in the study group exposed to risk despite a personalised safety briefing and having a protected sleeping space. Three babies under 4 months of age were placed non-supine for sleep ‘yesterday’, 2 on their fronts and one on the

side (9%). Two were also 'same bed' co-sleeping and not in a pēpi-pod 'last night', one of these for the whole night. Thankfully, none of the three babies had been exposed to smoking in pregnancy. Another five babies who had been, and were also under four months of age, were sometimes 'same-bed' co-sleeping and not in a pēpi-pod. Education needs to emphasise that the prevention goal is to protect 'every sleep' through the period of developmental vulnerability. It cannot be a pick and choose arrangement.

Ripple effects: For an idea to spread and have a wider influence, it needs to be worth talking about (Rogers, 2002). This is called flow. It is not something that can be planned in to a project, rather a highly desirable effect that finds the project. The pēpi-pod was worth talking about. It was talked about on national radio, on prime time national television, in major newspapers and it was talked about in women's groups, sewing networks and families. In educational material and on the pēpi-pod website, it was clear that the device was 'protection for babies more vulnerable to accidental suffocation'. It can be hoped, therefore, but not claimed, that as a result there is heightened awareness across New Zealand of safe sleep conditions for babies and strengthened support for families to act accordingly. Total infant mortality rates for 2011 recently released by Statistics New Zealand, show the lowest rates ever recorded (4.7/1000 live births compared to 5.1 in 2010 and 5.6 in 2002). This is at least a change in the desired direction, whatever the influences may be.

Next steps: Pēpi-pods were assembled from donated and subsidised goods and services at an estimated cost of NZD\$60.00 (+GST) per complete package. Findings from this study suggest that, as well as recipients, an average of 3.5 'others' are drawn into conversations about safe sleep conditions for babies with every pod distributed, making it a most cost-effective and targeted approach to preventing sudden infant death. Health-funded pēpi-pod services have already taken root in two other regions of New Zealand with many more regions considering this.

As designed, the approach is multi-layered. It is intended to be much more than a baby bed and to have benefits broader than preventing accidental suffocation. Its greater value may be as 'training' of teams of infant protection advocates to be active within priority groups, by means of the thorough safety briefing built into receiving a pod. To replicate an intervention that has been successful in one set of

conditions, to be successful in another, requires an understanding of the tensions of intervention fidelity and adaptation. The need to modify in order to fit local conditions cannot be at the expense of the core elements that underpin effectiveness. The challenge lies in knowing what the core elements are and this study has enabled recommendations to be made.

Conclusion

Pēpi-pods solved problems for people. Most obviously, they enabled parents to provide a protected space for babies when they were ‘same bed’ co-sleeping and gave peace of mind in frightening times. Importantly, they enabled babies to settle and sleep in developmentally appropriate conditions. The devices were widely and appropriately used, enhanced closeness and safety, and were rated highly by users. The pēpi-pod intervention demonstrates what can be achieved in a time of crisis when the principles of urgency, focus and collaboration are applied. Caution is advised in interpreting and replicating these results. The complete package, of ‘protected sleeping space plus education’ and ‘crisis intervention thinking’, could be considered, in ordinary times, for protecting more vulnerable babies from sudden infant death when ‘same-bed’ co-sleeping.

Recommendations

We make the following recommendations for what that can be adapted and what must be preserved, to guide effective replication of the pēpi-pod approach to new environments and conditions.

Elements to preserve

1. Promote as a health intervention and not as social support.
2. Offer as an option, with terms and conditions, and allow choice.
3. Promote the device as ‘not free’; that in exchange for the pod recipients are expected to help spread awareness within their networks about protecting babies as they sleep.
4. Train and support a small network of distributors, and manage quality of education and process.
5. Supply, as a priority, to Maori babies exposed to smoking in pregnancy.

6. Promote as being 'as well as' a cot or bassinet; as a specific tool for risk situations.
7. Supply as a full package that includes bedding.
8. Supply in time for using from birth.
9. Provide a thorough safety briefing to every recipient.
10. Include 'safe ways to settle babies' as a topic of the safety briefing.
11. Follow-up recipients after two weeks of use and assess interest in keeping their device.
12. Survey a sample of recipients when their babies are 8-10 weeks old for feedback on usage.

Elements that can be adapted

1. Use imagery and language on resource material to enhance local appeal.
2. Broaden eligibility criteria where resourcing allows or to include other vulnerable groups
3. Modify data forms to add extra information that may be required locally
4. Explore local funding and supply solutions.

Tables

Table 1. Baby and household characteristics, by risk status of baby (n=100).

	SUDI Risk Status		
	High	Low	TOTAL
	N=34	N=66	%
Earthquake damage to house			
Bad or quite bad damage	6 (17.7)	17 (25.8)	23
Some damage	15 (44.1)	26 (39.4)	41
Little or no damage	12 (35.3)	22 (33.3)	34
Times moved house since baby was born			
not at all	23 (67.7)	54 (81.1)	77
once	8 (23.5)	8 (12.1)	16
2 or more times	3 (8.8)	4 (6.1)	7
Adults in the household			
1	5 (1.5)	5 (7.6)	10
2	17 (50.0)	51 (77.3)	68
3 or more (range 3-8)	12 (35.3)	10 (15.2)	22
Children in the household			
just baby	3 (8.8)	12 (18.2)	15
1 other	11 (32.4)	28 (42.4)	39
2 other	13 (38.2)	15 (22.7)	28
3 or more others	7 (20.6)	11 (16.7)	18
Baby characteristics			
Age: < 4 months at time of survey	14 (41.2)	29 (43.9)	43
4 months or more at time of survey	19 (55.9)	35 (53.0)	54
Gender: boy	16 (47.1)	32 (48.5)	48
girl	18 (52.9)	34 (51.5)	52
Ethnicity: Includes Maori	17 (50.0)	13 (19.7)	30
Includes Pacific Peoples	2 (5.9)	5 (7.6)	7
Non-Maori/Pacific Peoples	15 (44.1)	50 (75.8)	65
First born baby for mother	16 (47.1)	39 (59.0)	55
Parent characteristics			
Community services card holder	27 (79.4)	32 (48.5)	59
Age of mother: <25 years	12 (35.3)	11 (16.7)	23
25-34 years	18 (52.9)	39 (59.1)	57
35 and more years	4 (11.8)	16 (25.8)	20
Survey completed by: mother	24 (70.6)	59 (89.4)	83
father	1 (2.9)	3 (4.5)	4
other	9 (26.5)	4 (6.1)	13
Currently living in Christchurch	31 (91.2)	63 (95.5)	94
Smoking, alcohol and drug use			
Mother smoked: before becoming pregnant	24 (70.6)	12 (18.2)	36
during pregnancy	24 (70.6)	0 (0.0)	24
currently	18 (52.9)	2 (3.0)	20

Smoking in household (range 1 to 4 people)	26 (71.4)	4 (6.1)	30
Daily alcohol use	2 (5.9)	0 (0.0)	2
Regular use of drugs or medication	6 (17.7)	7 (10.6)	13

Table 2. Responses to questions about getting a pēpi-pod, by SUDI risk status of baby (n=100).

	SUDI Risk Status		
	High	Low	TOTAL
	N=34	N=66	%
Sources promoting the pēpi-pod			
health professionals	22 (64.7)	26 (39.4)	48
family	7 (20.6)	21 (31.8)	28
media / internet	6 (17.7)	15 (24.2)	21
Why one was wanted			
earthquake concerns	28 (82.4)	54 (81.8)	82
cot death concerns	10 (29.4)	20 (30.3)	30
no bed for baby	1 (3.1)	2(2.9)	3
How it was accessed			
we picked it up	19 (55.9)	10 (15.2)	29
it was dropped off	15 (44.1)	56 (84.9)	71
Topics covered in the safety briefing			
making up the pēpi-pod	31 (91.2)	63 (95.5)	94
position and breathing	31 (91.2)	61 (92.4)	92
safe placement	28 (82.4)	57 (86.4)	85
rules of protection	27 (79.4)	56 (84.9)	83
support with settling	24 (70.6)	53 (80.3)	77
who needs one and why	23 (67.7)	50 (75.8)	73
Who received the briefing			
baby's mother	30 (88.2)	53 (80.3)	83
baby' s father	3(8.8)	8 (12.1)	11
baby's grandparent	1 (2.9)	4 (6.1)	5
Conversations had with others			
with less than 3 others	15 (44.1)	20 (30.3)	35
with 3 or more others	19 (55.9)	44 (66.7)	63
<i>spread to a total minimum people</i>	112, X=3.3	241, X=3.7	353, X=3.5
Methods used for reaching others			
talk	31 (91.2)	63 (95.5)	94
internet (email and Facebook)	7 (20.6)	24 (36.4)	31
Risk factors			
earthquake related	29 (85.3)	20 (30.3)	49
baby sleeping in bed with others	11 (32.4)	30 (45.5)	41
prem (<36 wks) or low birth wgt (<2500g)	11 (32.4)	0 (0.0)	11
smoking in pregnancy	26 (76.5)	0 (0.0)	26
no bed for baby	1 (2.9)	3 (4.6)	4
Age of baby when got pēpi-pod			
not yet born or < 1 wk	12 (35.3)	27 (40.9)	39
1- 4 wks	12 (35.3)	19 (28.8)	31
5 - 8 wks	5 (14.7)	14 (21.2)	19
8 or more wks	5 (14.7)	6 (9.1)	11
Safe sleep advice received			
yes	32 (94.1)	58 (87.9)	90

Table 3. Responses to questions about using a pēpi-pod, by SUDI risk status of baby (n=100).

	Vulnerable to SUDI		TOTAL
	More N=34	Less N=66	
When used			%
only in the night	8 (23.5)	17 (25.8)	25
only in the day	5 (14.7)	4 (6.1)	9
only when away from home	0 (0.0)	2 (3.0)	2
any of these times	19 (55.9)	43 (65.2)	62
How often			
all sleeps	3 (8.8)	13 (19.7)	16
most sleeps	11 (32.5)	17 (25.8)	28
some sleeps	19 (55.9)	36 (54.6)	55
Where used			
on a bed	29 (82.3)	60 (90.1)	89
on a couch	13 (38.2)	22 (33.3)	35
on the floor	8 (23.5)	27 (40.9)	35
on a table or bench	5 (14.7)	7 (10.6)	12
In a cot	0 (0.0)	3 (4.6)	3
Same bed co-sleeping			
any with pēpi-pod	27 (79.4)	60 (90.9)	87
any without pēpi-pod	13 (38.2)	28 (42.4)	41
any with pēpi-pod + smoking in pregnancy	19 (55.9)	0 (0.0)	19
any without pēpi-pod + smoking in pregnancy	7 (20.6)	0 (0.0)	7
any without pēpi-pod + premature /lbw	5 (14.7)	0 (0.0)	5
Same bed co-sleeping placement of adult covers (n=87)			
from baby's neck down	2 (7.4)	2 (3.3)	4 (4.6)
from baby's waist down	12 (44.4)	16 (26.7)	28 (32.2)
from baby's hips down	1 (3.7)	10 (16.7)	11 (12.6)
over no part of baby	12 (44.4)	29 (48.3)	41 (47.1)
Same bed co-sleeping placement in the bed (n=87)			
on bottom sheet or mattress	19 (70.4)	50 (83.3)	69 (79.3)
on adult covers	5 (18.5)	6 (10.0)	11 (12.6)
on a pillow	2 (7.4)	4 (6.7)	6 (6.9)
Features appreciated			
can have baby close by	29 (85.3)	61 (92.4)	90
gives peace of mind with the earthquakes	28 (82.4)	54 (81.8)	82
easy to move about	23 (67.6)	51 (77.3)	74
bed sharing is safer	20 (58.8)	42 (63.6)	62
came with its own bedding	13 (38.2)	36 (54.6)	49
easy to clean	12 (35.3)	23 (34.9)	35
helps with settling	13 (38.2)	17 (25.8)	30
Items of the package			
used the merino blanket	29 (85.3)	61 (92.4)	90
used wrap around sheet	29 (85.3)	59 (89.4)	88
Accidents, damage and near-misses			

accidents	0 (0.0)	0 (0.0)	0
mattress went mouldy	0 (0.0)	1 (54.6)	1
breakages (box cracked around the handle)	0 (0.0)	1 (34.9)	1
pets and/or toddlers caused concern	4 (11.8)	7 (10.6)	11
Duration of Use			
In use when baby 8 wks: Past users	16 (94.1)	31 (83.3)	47
Current users	11 (32.4)	12 (18.2)	23
<i>Minimum Total</i>	<i>27 (79.4)</i>	<i>43 (65.2)</i>	<i>70</i>
In use when baby 12 wks: Past users	6 (17.7)	18 (27.3)	24
Current users	5 (14.7)	7 (10.6)	12
<i>Minimum Total</i>	<i>11 (32.4)</i>	<i>25 (37.9)</i>	<i>36</i>
Reason for stopping use (n=72)			
Baby got too big for it	12 (55.5)	31 (62.0)	43 (59.7)
Baby settling OK in cot/bassinet	13 (59.1)	21 (42.0)	34 (47.2)
Baby starting to roll	2 (9.1)	4 (8.0)	6 (8.3)
Aftershocks are lessening	2 (9.1)	3 (6.0)	5 (6.9)
Sleeping place when finished using pēpi-pod			
cot	32 (94.1)	55 (83.3)	87
in bed with a parent	2 (5.9)	11 (16.7)	13
What next for the pēpi-pod			
keep for my next baby	5 (14.7)	31 (47.0)	36
pass to another baby	12 (35.3)	17 (25.8)	29
pass it back to pēpi-pod people	3 (8.8)	2 (3.0)	5
not yet decided	14 (41.2)	16 (24.2)	30
Overall value ratings for pēpi-pod			
high (7-9/9)	34 (100)	57 (86.4)	91
med (4-6/9)	0 (0.0)	8 (12.1)	8
low (1-3/9)	0 (0.0)	1 (1.5)	1
Currently using pēpi-pod			
yes	12 (35.3)	16 (24.2)	28

Table 4. Comments on experiences using a pēpi-pod, by theme.

Closeness

- If we were having shaky days I would keep him out in the lounge with me.
- I could keep my baby close.
- I loved it having baby close to us with the earthquakes and knowing she was safe sleeping with us
- it was helpful during the Christchurch earthquakes, keeping him close
- Amazed how kind and caring people are who created these, especially at a time when being close to our little ones was so important.
- I wish there was a larger one for 4-7 or 8 months as I would still like to sleep in bed with baby if I could.
- wanted baby close
- Peace of mind and general appreciation
- A simple yet wonderful idea that offers simple safe sleeping solutions for babies in uncertain times.
- Due to the earthquakes I could settle baby to sleep and take the pēpi-pod from room to room with me which gave me peace of mind.
- Pēpi-pod is really great to use. Peace of mind.
- Really thankful for it
- Fantastic with the worry of earthquakes down here in Christchurch - I could keep my baby close.
- It was great.
- It was really nice to know that people all over New Zealand were thinking about new mothers in Christchurch with the earthquakes. It was quite humbling
- it gave me peace of mind that my baby was safe if there was another earthquake I knew where she was and very easy to move in a rush
- It was a great to have. in case of earthquakes
- It was an amazing initiative, which I really appreciated post-earthquake. Absolutely great.
- It was one of the most helpful things we received, considering the earthquakes, and we are very grateful to the people who provided it. We still use it every time we go back to Christchurch with baby

Practical support

- It was a very practical item that was easily transportable and made an ideal portable bed when we stayed away from home.
- I loved the fact that if we had to evacuate baby bed could come too.
- Very helpful and easy to carry everywhere. It's awesome.
- Able to use when staying at others places, awesome for floor play.
- Really helpful both during the night and day. Harvey like to lie in his on the couch and play with his baby gym
- I could get in and out of bed without disturbing her sleep, when any aftershocks occurred during the night so that I could check up on the other children after an aftershock
- It was great to be able to go on holiday or to friends' homes and know I had a safe place for my baby to sleep.
- The pēpi pod was great for me. I wanted it more to do with the earthquakes so if I had to leave I could just pack up and go and not worry were baby was going to sleep
- While travelling I found that the pēpi pod fitted, well into my suitcase and I was able to pack baby's clothing etc. in and around it. Also I realised that no one had a baby bath for the baby to bathe in and my husband was not with me to shower with him so I used the pēpi-pod to bathe baby in. My family thought it was a wonderful invention
- Easier to take when visiting others at night say for dinner, than the porta-cot and can have baby in the same area as us because of the size.
- Convenience. Baby has own bed when out.
- Really simple idea to be shared with any young family with limited economy.

Safety

- Thank you for this, I felt safe with her in her pod when she was in bed with me

- I am very thankful for my pēpi-pod and will be passing it on again when my sister in-law returns it to me, so that someone else can keep their baby safe.
- I am grateful for the pēpi-pod, all my kids have slept with me, I am a non-smoker, but the stress of the earthquakes made it much easier for me to sleep at night knowing that my baby was safe in her pod next to me
- With being first time parents we wanted bubs to be close but also safe while we all rest.

Age-appropriate care

- I could have the baby in my room even though our room is small and we could not fit the cot in it. Also it meant that due to the frequent waking of the baby I could attend to his needs quickly, even in the middle of the night, as he was always close to me.
- Really practical. Better than a baby seat as baby can sleep on a flat surface.
- It made me sleep better at night knowing he was safe and nothing could suffocate him.
- This is a really good alternative to a cot when baby is small.
- She would lie quietly for longer in the morning.
- Really practical. We have often used a pram to move baby around the house or as temp bed when visiting others. Better than a baby seat as baby can sleep on a flat surface.
- When I went to collect it, I could not believe how supportive the ladies were. I received great advice, a fantastic pod and even a hug. It definitely sent us down the right path for Isla becoming a fantastic sleeper, who now settles on her own in a cot while still awake. Thank you so much.

Other comments

- Only use for very short time but was very helpful.
- Really liked it, thought it was a great idea but already had beds for baby to use.
- The concept is great but I took our son into bed to feed as he is a 'refluxer' and this wasn't possible with the pēpi pod and it also didn't leave my husband and me a lot of room in bed when it was in there.
- Great to start off with while babies small as she got bigger she could get her hands out and hits the sides.
- We wanted to have her in bed with us and found that in a queen sized bed the pēpi pod took up too much space for us to get a good sleep, but at the same time was narrow enough that baby would hit her wrists on the edge of the plastic.
- Mattress could be a bit thicker.
- Due to medical issues baby didn't settle well anywhere other than in my arms so ended up with a normal bed sharing situation but we researched thoroughly and we were very low risk.
- It's a bit narrow for my son who is a big boy.
- You need a big bed.
- Our baby was settling well in a bassinet and did not settle well in the pēpi-pod - I'm guessing because it was different. I think we didn't really need it. However my midwife raved about it and I really wanted to try it.

Table 5. Responses to questions about usual infant care ‘yesterday’ and ‘last night’, by age of baby.

Infant care conditions	Age of baby		
	<4 mths N=45 (%)	≥4 mths N=55 (%)	Total N=100 (%)
General care ‘yesterday’			
Any tummy time	37 (82.2)	52 (94.5)	89
Any breast milk	37 (82.2)	35 (63.6)	72
Exclusively	30 (66.7)	13 (23.6)	43
Plus solids	2 (4.4%)	19 (34.6)	21
None	7 (15.6)	20 (36.4)	27
Any time propped on pillows, tri-pillows, bean bags or a couch	15 (33.3)	28 (50.9)	43
Any time in front pack	14 (31.1)	14 (25.5)	28
Ever taken medication for colic or reflux	12 (26.7)	16 (29.1)	28
Putting baby to bed ‘yesterday’			
Swaddled	23 (51.1)	17 (30.9)	40
Placed on the back	41 (91.1)	50 (90.9)	91
side	1 (2.9)	5 (7.6)	6
front	2 (4.4)	0 (0.0)	2
Covers tucked firmly / no covers	36 (80.0)	47 (85.5)	83
Given a pacifier	10 (22.2)	15 (27.3)	25
Co-sleeping arrangements ‘last night’			
Any time asleep in same room as parent ‘last night’	27 (67.7)	45 (68.2)	72
all night	25 (73.5)	41 (62.1)	66
some of the night	2 (4.4)	4 (6.1)	6
Any time asleep in same bed as parent ‘last night’	13 (28.9)	20 (36.4)	33
all night	4 (11.8)	10 (15.2)	14
some of the night	6 (17.7)	13 (19.7)	19
Any time in same bed and also in a pēpi-pod/wahakura	7 (15.6)	0 (0.0)	7
Hours babies were asleep ‘last night’ between 7p.m. and 7 a.m.			
<8 hours	12 (26.7)	4 (7.3)	16
8-10 hours	20 (44.4)	15 (27.3)	35
10 or more hours	13 (28.9)	35 (63.6)	48
<i>Average hours per baby</i>	<i>8.7</i>	<i>9.8</i>	<i>9.3</i>

Competing interests: None known

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