

Awareness of infant safe sleep messages and associated care practices: findings from an Australian cohort of families with young infants

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ABSTRACT

Objective To investigate primary infant caregiver awareness of the current national public health safe sleep messages and the associations of awareness with care practices.

Design and setting A cross-sectional survey in Queensland, Australia. All families with live babies birthed during April–May 2017 were eligible. Questionnaires were distributed when infants were approximately 3 months old.

Participants Of the 10 200 eligible families, 3341 (33%) primary caregivers participated.

Main outcome measures Participants were asked: to recall key safe sleeping messages they were aware of (unprompted); questions about their infant care practices; and to select the current, national six safe sleeping messages (prompted multi-choice).

Results Overall, the majority of families are aware of sleep-related infant mortality and sudden infant death (3178/3317, 96%); however, approximately one in four caregivers (867/3292, 26%) could not identify the current six messages to promote safer infant sleep in a multi-choice question. Despite being aware of the six key messages, some caregiver practices did not always align with advice (336/2423, 14% were not smoke-free; 349/2423, 14% were not usually supine for sleep; 649/2339, 28% employed practices which may increase risk of head or face covering; 426/2423, 18% were not receiving breastmilk).

Conclusions There is considerable scope for improvement in parent awareness and ability to recall key safe sleep messages. Awareness of advice does not always translate into safe infant care. Health promotion messaging to encourage safer infant sleep, ultimately aimed at reducing sudden unexpected infant deaths, needs more effective supportive strategies and dissemination if future campaigns are to be successful.

INTRODUCTION

Modifiable infant care practices remain the focus of sudden unexpected death in infancy (SUDI) safe sleep public health campaigns.^{1–4} However, uptake of safe sleep advice remains suboptimal.^{5,6} In Australia, a recent study of caregivers with young babies found only 13% of families routinely adopted all six

What this study adds?

- One in four families could not identify the current six key recommendations to reduce risk of sleep-related infant death.
- Caregiver awareness of safe sleep messages usually translated into safer infant sleep practices being employed; however not in all cases.
- Concerted efforts to provide consistent messaging along with practical strategies aimed at improving message recall and practice uptake are required.

What is known about the subject?

- Caregivers who employ safe sleep strategies into infant care reduce the risk of sudden unexpected death in infancy.
- The uptake of infant safe sleep advice is suboptimal with unsafe sleep practices persisting in sleep-related infant mortality cases.
- Little is known about primary infant caregiver awareness of contemporary safe sleep messages and if caregiver awareness influences care practices.

contemporary nationally supported ‘Safe Sleeping’ messages.⁷ Another local report found all sleep-related infant mortality cases had at least one contributory unsafe sleep practice, with most (86.4%) having two or more at the time of death.⁸ The major risk factors of non-supine sleep positioning, smoking, surface-sharing, not breast feeding and use of excess bedding persist,^{8,9} despite ongoing public health programmes which aim to reduce SUDI.

Emerging literature suggests explanations for suboptimal uptake of messages may include limited dissemination of safe sleep messages to new parents; large volumes of information that can be overwhelming; culturally inappropriate or insensitive messaging for priority populations; and practical difficulties

Box 1 Australia's national 'Safe Sleeping' campaign messages.⁴

Six ways to sleep baby safely and reduce the risk of sudden and unexpected death in infancy:

1. Sleep baby on back.
2. Keep head and face uncovered.
3. Keep baby smoke-free before and after birth.
4. Safe sleeping environment night and day.
5. Sleep baby in safe cot in parents' room.
6. Breast feed baby.

implementing messages into family routines.^{5 10} There is a paucity of literature exploring primary caregivers' awareness of current safe sleep messages, with no published studies evaluating parent awareness of the most recent Australian 'Safe Sleeping' campaign, comprising six key messages (box 1), since its launch in 2012.⁴

The objectives of this paper are to explore infant caregiver awareness of Australia's current safe sleep messages and if parent awareness influences practice.

METHODS

A cross-sectional survey design was used to measure safe sleep message awareness and infant care practices used by primary caregivers whose babies birthed during April–May 2017 (n=10 200) in Queensland, Australia. Questionnaires (see online supplemental appendix A) were distributed by the Queensland Registry of Births, Deaths and Marriages to mothers via postal mail when infants were approximately 3 months old. No incentives were provided for study participation. An estimated response rate of 30% was expected given Queensland survey participation rates using a similar sample frame.¹¹ Survey development and study methodology used in the 'I-CARE Queensland' Study have been reported previously in detail, together with prevalence of key infant care practices associated with Australia's current SUDI risk reduction programme.^{7 12}

Caregiver recall and awareness of the six key safe sleep messages comprising the current national campaign (herein referred to as the 'key messages') were assessed through an unprompted question (free-text responses) and prompted (multiple-choice) question. The unprompted recall question was asked first to reduce undue influence from the remaining survey questions (it is acknowledged participants may have returned to this question on the paper questionnaires). For questions where no response was provided, these were considered to be missing data and are reflected in reported denominators.

Free-text responses were analysed thematically and coded numerically using predetermined criteria, guided by current safe sleep messages,⁴ by two authors (RC, JY) to enable quantitative summary analysis, following familiarisation with the data. Differences or uncertainty in coding

of responses were evaluated by a third reviewer (LK), prior to consensus being reached. Responses were coded as accurate (consistent with key messages); inconsistent (not part of key messages but practice/behaviour may be part of previous campaigns or a recommendation from another country); and hazardous (inaccurate and potentially unsafe, for example, prone sleep position). Due to the complexity of, and debate in literature regarding bed-sharing^{6 13–15} resulting in differing national and international guidelines, a fourth category was included to capture responses where strategies to reduce risk in shared sleeping environments, consistent with the Red Nose risk minimisation approach,¹⁶ were listed.

Data analysis

Univariable and multivariable analyses were undertaken to examine the relationships between caregiver awareness of safe sleep messages and reported infant care practices with family sociodemographic, antenatal, birth and environmental characteristics. Univariable associations were assessed using χ^2 tests. Multivariable ORs were estimated using logistic regression and a backward stepwise reduction process until all variables remained significant at the 5% level. Analyses were performed using SAS V.9.4 (SAS Institute). Statistical significance was defined at 5%.

Patient and public involvement

While neither study participants nor the public were involved in study design, the questionnaire was modelled on the 2002 Queensland Infant Care Practice Study¹⁷ with the addition of contemporary questions, and piloted by 30 mothers. This process, detailed elsewhere,^{7 12} facilitated questions that were well defined, clearly understood and presented in a consistent understandable manner for parents/carers.

RESULTS

Participant characteristics and awareness of safe infant sleep messages

A response rate of 33% (3341/10 200) was achieved. Median age of caregivers was 32 years (IQR 28.7–35.1) with a median infant age of 3.7 months (IQR 2.8–4.1). When compared with the target population, participant caregivers were more likely to be partnered, born in Australia, be primiparous and less likely to be a younger mother (≤ 24 years), or identify as Aboriginal and/or Torres Strait Islander. Most participants (2439, 73%) returned the questionnaire via reply-paid postage. Caregiver characteristics and care practices used did not differ between electronic and paper completion with the exception of maternal smoking (participant characteristics have been described in detail elsewhere).⁷

While some caregivers did not recall hearing the term SUDI, which includes sudden infant death syndrome (SIDS) and fatal sleeping accidents (139/3317, 4.2%), most remembered receiving advice about safe infant sleep (3235/3325, 97%), with healthcare professionals reported

Table 1 Awareness of key safe sleeping programme messages

Responses	Total number of times response listed* or selected n (%)	Number of caregivers who provided a response within each category† n (%)
Unprompted recall question: accurate responses (ie, consistent with strategies or key messages in the current safe sleep campaign) ⁴		
Message 1: sleep baby on back		2791 (83.4)
Baby on back	2741 (82.7)	
No prone sleep	68 (2.0)	
Message 2: keep head and face uncovered		
Head and face uncovered	952 (28.5)	
Don't sleep with hats	287 (8.6)	
Feet to foot	1251 (37.5)	
Use sleeping bag	182 (5.5)	
Blankets tucked in	1137 (34.0)	
Message 3: keep baby smoke-free before and after birth		
Smoke-free	1101 (33.0)	
No alcohol	99 (3.0)	
No drugs	46 (1.4)	
Message 4: safe sleeping environment night and day		
Safe cot (ie, meets current standards)	114 (3.4)	
Safe mattress (ie, firm, flat, right size for cot)	460 (13.8)	
Nothing in cot (ie, safe bedding—no soft surfaces or bulky bedding)	1424 (42.6)	
No pillow	862 (25.8)	
No cot bumper	606 (18.1)	
No toys	1714 (51.3)	
No bulky blankets/doonas	125 (3.7)	
No sheepskin	14 (0.4)	
Message 5: sleep baby in safe cot in parents' room		
Room-share	888 (26.6)	
Sleep in cot/own bed (ie, don't bed-share)	1092 (32.7)	
Cot in parents' room (those who listed both Room-share and Sleep in cot/own bed)	426 (12.8)	
Not sleeping on couch with or without another person	57 (1.7)	
Not sleeping on a person/chest	23 (0.7)	
Not sleeping in sitting devices (eg, bouncer/car seat)	22 (0.7)	
Message 6: breast feed baby		
Breast feed	321 (9.6)	
Unprompted recall question: inconsistent responses (ie, not a listed strategy or key message but not necessarily incorrect or unsafe)		
Thermoregulation	648 (19.4)	
Swaddle/wrapping	493 (14.8)	
No blankets/not too many blankets	354 (10.6)	
Dummy use	140 (4.2)	
Room/cot ventilation	107 (3.2)	
Use a baby monitor	47 (1.4)	
Immunise baby	24 (0.7)	
Other	224 (6.7)	

Continued

Table 1 Continued

Responses	Total number of times response listed* or selected n (%)	Number of caregivers who provided a response within each category† n (%)
Unprompted recall question: shared sleeping responses		163 (4.9)
Factor(s) listed to reduce risk while sharing sleep surface	163 (4.9)	
Unprompted recall question: hazardous responses		60 (1.8)
Practice(s) known to potentially increase risk	60 (1.8)	
Prompted multi-choice question: responses		3292 (98.5)
Correct selection of the current 6 key safe sleep messages	2425 (73.7)	
Incorrect multi-choice selection	745 (22.6)	
Unsure	122 (3.7)	

*Multiple responses could be listed in free-text recall question.

†For accurate responses, caregiver number was measured by recall of at least one or more responses related to the key message and/or associated strategies promulgated to support the key message.

as the most common source of advice (1978/3228, 61%). More than 1 in 10 (380/3305, 12%) parents would have liked to have received more information about safe sleep. Co-sleeping, strategies to support settling baby supine to sleep, thermoregulation and swaddling/wrapping were the most common topics where more information was sought.

Comparison of online versus postal responses for the unprompted recall question demonstrated there was either no difference or a slightly higher response prevalence for key messages among online participants (unable to go back in survey after advancing from a question), when compared with postal participants (had ability to amend responses).

A small proportion of caregivers indicated they did not know any (unprompted) recommendations to reduce SUDI (182/3295, 5.5%). Table 1 provides caregiver recall of safe sleep messages measured by unprompted recall of key messages and/or one or more associated strategies to support the key message. Of the 3113 participants who indicated they could identify a key message, less than half listed four or more accurate messages or strategies (1419, 43%); with the most common being: baby on back, no toys, safe bedding and ‘feet to foot’.

Univariable analysis identified a number of family characteristics to be significantly associated with a positive awareness of the current safe sleep messages (online supplemental table). In the multivariable model, a number of variables remained independently associated after controlling for potential confounders (table 2). Analyses indicated mothers aged 25 years or older, being partnered, Australian born, and having completed tertiary education, a private antenatal model of care and awareness of terms relating to sudden infant death were independently associated with correct selection of the six key messages (prompted).

While the majority of caregivers (2425/3292, 74%) selected the correct response with the six key messages

(prompted multi-choice question), a considerable proportion were incorrect (745, 23%) or unsure (122, 3.7%).

Relationship between message awareness and practice implementation

When a correct response was recalled (unprompted), it was associated with the caregiver being significantly more likely to usually employ that practice (table 3). Similarly, families in the prompted question who correctly selected the six key messages were significantly more likely to use practices consistent with the key messages (table 4).

Placing baby on their back on a firm, flat surface was correctly identified as the safest sleep position for a healthy baby by most caregivers (2823/3288, 86%), however, only 13% (414/3286) identified that supine sleep on a flat surface was safest for a baby with reflux, while a quarter (821/3286, 25%) were unsure or did not know. A considerable proportion incorrectly selected elevating baby’s head (1955/3286, 60%) and/or placing baby prone or side lying (360/3286, 11%) as the recommended sleep position for a baby with reflux. Caregivers who incorrectly identified *supine with head elevation* as the recommended sleep position for healthy babies (279/3325, 8.4%) were significantly more likely to use pillows ($p<0.0001$), rolled towels/blankets ($p=0.004$) or positioning devices (eg, wedges) ($p=0.001$), when compared with caregivers who selected *supine on a firm, flat surface* as the recommended sleep position.

Where a caregiver listed *room-sharing* in the unprompted recall, the proportion of caregivers who room-shared with baby was nearly twice the proportion of caregivers who slept their baby in a separate room (572/883, 65% vs 311/883, 35%). Of babies usually placed to sleep alone in a separate room (1251/3305, 38%), a quarter (311/1251, 25%) had listed room-sharing as a key message, and a considerable proportion used a baby monitor compared with those who slept baby in a separate room and did

Table 2 Characteristics remaining significantly associated with awareness of safe sleeping programme messages in multivariable analysis

	Prompted awareness Correct multi-choice selection of the current 6 key messages OR (95% CI)
Maternal age	
24 years or younger	1.00
25 years or older	1.88 (1.41 to 2.52)
Marital status	
Single (never married, separated, widowed)	1.00
Partnered (married/de facto)	1.55 (1.07 to 2.24)
Country of birth	
Overseas born	1.00
Australian born	1.36 (1.11 to 1.67)
Education level*	
Less than tertiary completed	1.00
Tertiary completed	2.13 (1.75 to 2.58)
Model of maternity care†	
Public	1.00
Private	1.35 (1.13 to 1.63)
Heard of terms SUDI and SIDS	
No	1.00
Yes	2.04 (1.36 to 3.07)

*Tertiary education in Australia includes training completed in both higher education (including universities leading to a Bachelor, Master or Doctoral degree) or vocational education and training (providing certificate and diploma qualifications).

†Australia's healthcare system has two models: the public health system where Australian public access care for free or at a lower cost via a tax-funded scheme, and the private health system where health service providers are owned and managed privately and services provided at the expense of the client.

SIDS, sudden infant death syndrome; SUDI, sudden unexpected death in infancy.

not use a monitor (757/1242, 61% vs 485/1242, 39%). Although almost one-third of caregivers (1061/3267, 33%) listed *sleep baby in a cot or own bed* as a key message, over half (543/1061, 51%) had shared a sleep surface with their baby in the last 2 weeks.

Caregivers who listed *keep baby smoke-free* were proportionately less likely than families who did not list *keep baby smoke-free* to live in a household with one or more current smokers (126/1091, 12% vs 410/2200, 19% ($p<0.0001$)), or identify maternal smoking during pregnancy (26/1089, 2.4% vs 109/2192, 5.0% ($p=0.0004$)) or post partum (43/1091, 3.9% vs 148/2200, 6.7% ($p=0.0013$)). This is consistent with the prompted findings where caregivers who correctly selected the key messages, compared with those who were unsure or incorrect, were more likely to have a smoke-free household (2087/2423, 86% vs 669/869, 77% ($p<0.0001$)).

Information sources for safe sleep advice and message awareness

Most caregivers (3024/3233, 94%) received safe sleep advice from their nurse or midwife. Nearly half (1573/3228, 49%) indicated their nurse or midwife was their main source of safe sleep advice with the next most common sources being: previous experience, books/brochures, internet and family/friends (table 5). Prevalence of recall was statistically significantly lower among participants whose main source of advice was a healthcare professional, compared with another advice source, for key messages: keeping baby smoke-free (633/1977, 32.0% vs 448/1250, 35.8% ($p=0.025$)), safe cot in parents' room (236/1978, 11.9% vs 182/1250, 14.6% ($p=0.0302$)) and breast feed baby (117/1977, 9.0% vs 142/1250, 11.4% ($p=0.026$))).

DISCUSSION

The I-CARE Queensland Study investigated parental awareness of Australia's current six 'Safe Sleeping' public health programme messages, launched in the 2012 'Safe Sleep, My Baby' campaign. Numerous campaigns have targeted SUDI reduction in Australia since 1991, and this study confirms the message is being shared, heard and applied.

Some caregivers noted they were less familiar with the term SUDI compared with SIDS. During the last decade, the term SUDI (inclusive of, but not limited to, SIDS, fatal sleeping accidents and deaths undetermined)

Table 3 Unprompted message awareness and practice implementation

Key safe sleep messages*	Infant care practices employed consistent with associated key message				P value
	Caregiver recalled message		Caregiver did not recall message		
n	%	n	%		
Baby on back	2303/2735	84.2	442/574	77.0	<0.0001
Head and face uncovered	721/926	77.9	1426/2252	63.3	<0.0001
Keep baby smoke-free	965/1091	88.5	1790/2200	81.4	<0.0001
Sleep in cot in parents' room	162/421	38.5	909/2876	31.6	0.005
Breast feed baby	291/321	90.7	2275/3002	75.8	<0.0001

*Key message 'safe sleeping environment' excluded from analysis due to responses capturing part of, but not all, key components of the 'safe sleeping environment' message (ie, safe cot, safe mattress, safe bedding).

**Table 4** Prompted message awareness and practice implementation

Safe sleep message	Infant care practices employed consistent with associated key message				
	Correct selection of the current six key messages		Unsure or incorrect selection of the messages		P value
	n	%	n	%	
Baby on back	2074/2423	85.6	672/887	75.8	<0.0001
Head and face uncovered	1690/2339	72.3	458/840	54.4	<0.0001
Keep baby smoke-free	2087/2423	86.1	669/869	77.0	<0.0001
Safe sleeping environment	876/2414	36.3	230/881	26.1	<0.0001
Sleep in cot in parents' room	849/2418	35.1	222/879	25.3	<0.0001
Breast feed baby	1997/2423	82.4	570/901	63.3	<0.0001

has become more widely used in Australian safe sleep messaging,^{4 18} in an effort to focus on modifiable risk and protective factors associated with potentially avoidable infant mortality^{19 20}; yet there remains substantial room for improvement. With continued inconsistency and confusion in these classification terms identified as an issue for pathologists and researchers working in the field,²¹ this poor knowledge and understanding of terms by the general public is not surprising.

Misinformation relating to optimal positioning for infants with mild oesophageal reflux appears to pervade in this Australian population. A concerning proportion of parents adopted inclined infant sleep positions or used hazardous practices²² despite national safe sleep recommendations to the contrary.^{4 23} These findings highlight the importance of caregivers understanding the evidence underpinning safe sleep messages, particularly relevant for families with infants born premature or with medical needs.

Significant associations between knowledge of safe infant sleep practices and application of these practices

were clearly evident in our study, affirming the value of clear public health campaigns. However, messages may not be reaching some vulnerable groups of the population. One in four families from a relatively socially advantaged population,⁷ could not identify the current six key recommendations to reduce risk of sleep-related infant death in a multi-choice question. This finding is important to inform future public health initiatives as social inequalities have widened in recent decades with infant deaths known to occur most frequently in the context of unsafe sleep environments^{6 24} among families experiencing socioeconomic disparities, with poorer access to healthcare and educational opportunities.^{24–27}

Further, parent recall responses were inconsistent with key messages, illustrating limited awareness and highlighting misconceptions associated with suboptimal infant care practices. We propose that this is contributed to by the number and complexity of key messages in the current national safe sleeping programme. Specifically, the fourth key message 'safe sleeping environment' is broad and imprecise; simple,

Table 5 Sources of advice from where safe sleeping information received

	Main source of safe sleep advice			Any safe sleep advice received from source		
	Rank	n=3228	%	Rank	n=3233*	%
Nurse/midwife	1	1573	48.7	1	3024	93.5
Previous experience	2	314	9.7	5	1135	35.1
Books/brochures	3	256	7.9	2	1579	48.8
Internet	4	249	7.7	6	1099	34.0
Family/friends	5	249	7.7	7	1059	32.8
Antenatal classes	6	241	7.5	4	1303	40.3
Doctor/GP	7	164	5.1	3	1322	40.9
Other:	8	137	4.2	11	134	4.1
Social media (Facebook, Twitter)	9	33	1.0	8	571	17.7
Media (TV, radio, magazines)	10	11	0.3	9	235	7.3
Baby store/shop/expo	11	1	0.0	10	211	6.5

*Participants could list more than one source of advice.

GP, general practitioner.

explicit and targeted message wording would be of benefit.^{28 29} However, oversimplified messaging may conversely lead to poor comprehension with parents not understanding how and/or why a recommendation is important, rendering the messaging ineffective. It has been suggested the rationale and justification for the mechanisms as to *how* the strategy works needs to be clearly communicated to parents,³⁰ as it has been demonstrated that when there is an understanding of a physiological link between advice and risk, implementation of practice is enhanced.¹⁰

Providing reliable and consistent safe infant sleep advice is a global public health problem and efforts at all system levels are recommended. While there was statistical significance on recall of messages based on sources of advice, this significance was relatively small and not considered to be of clinical significance. We live in an information-rich period where access and advice sources, such as the internet and social media, have no national boundaries or measures of accountability for accuracy.^{6 19} It is therefore understandable parental confusion exists when international, national and even local guidelines and policies are inconsistent.^{1 2 4 18 31} Similarly, if key messages appear non-specific or vague with multiple concepts (such as *safe sleeping environment*), without easily accessible adjunct information, this may be open to broader interpretation and the actual strategy of, for instance having no soft surfaces in the sleep space, is misplaced.

This study identified that despite parental awareness of a key message, it was not always followed. While it was beyond the scope of this study and the cross-sectional design used, to fully understand the reasons for low uptake of key messages into practice, previous studies have reported exhaustion, fatigue, cultural heritage, impractical advice and lack of understanding as influencing these choices.^{6 32 33} If socially advantaged parents, who are more likely to be aware of the advice and associated risks, are not always following the messages for every infant sleep, concerted efforts must be made to realise strategies and interventions, especially for families experiencing social vulnerabilities. Simply instructing families on 'what to do' and 'what not to do' is likely to be ineffective when families are presented with the complexities of parenting, particularly during the night; situational factors may strongly influence infant care choices and sleeping behaviours.⁶

A recent consensus forum which drew on international content expertise has prioritised strategies for stakeholder consideration in the revision of the next Australian safe sleep campaign³¹ which will aim to maximise reach to populations which experience vulnerabilities associated with the highest infant mortality. Directly informed by results of the I-CARE Study, the top four priority themes for future campaign messaging were identified as: sleep position, sleep space, smoking and surface-sharing.³⁴

Limitations

The aim of this study, to explore parental awareness of contemporary safe infant sleep messages and any associations with infant care practices used, was achieved in a large contemporary cohort of Australian families. As with any self-report cross-sectional study, social desirability bias and non-response bias must be considered when interpreting findings. Our sample, as reflected by our participant characteristics, comprised a relatively socially advantaged population, likely to have access to, and be more receptive of, health promotion opportunities.²⁴⁻²⁷ Furthermore, participants were from Queensland, an Australian state experiencing consistently higher infant mortality since the first national risk reduction campaign,³⁵ care is therefore required in generalising and interpreting information. Further investigation to explore caregiver practice and awareness in other Australian cohorts is recommended; particularly studies investigating challenges with implementing safe sleeping recommendations from parent perspectives.

Conclusion

This study has identified which public health messages aimed at reducing SUDI that caregivers are most likely to recall, and that the awareness of advice usually translates into safer practice; although, not in all cases. Understanding the difficulties parents experience in implementing safe sleep messages is an area recommended for further research in order to ensure future campaigns are founded on evidence-based strategies which are easy to understand, culturally acceptable and practical for parents to implement.

The mode of delivery, number and clarity of messages, along with consistency of message wording, may represent important modifiable factors in improving effectiveness of future public health campaigns. Safe, practical strategies to promote caregiver awareness and recall, together with promotion of understanding and value of the evidence underpinning safe sleep messages, need to be explored. Moreover, effective delivery of messaging requires ongoing evaluation and investigation to ensure future campaigns aimed at continuing to reduce infant mortality are successful and effective.

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Contributors RC, JY and LK conceptualised the study. RC and JY coordinated data collection, collating and processing data. RC, JY and JMDT analysed the results. JY, LK and JMDT provided expert guidance on the analysis plan. All authors contributed to the interpretation of results. RC prepared the manuscript with intellectual input from JY, LK and JMDT. All authors critically reviewed and have approved the manuscript.

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2017 Queensland Infant Care Study Questionnaire



Unique 4-Letter Code: (Providing your unique code will remove you from the Registry of Births, Deaths and Marriages reminder list)

Today's Date: / / (the date you started filling in this questionnaire)

Caregiver completing questionnaire: Mother
 Father/partner
 Other caregiver (e.g. Kinship carer, Grandmother): _____

Was baby a multiple birth? (e.g. a twin) Yes No

If you have had a multiple birth, please answer the questionnaire for the baby who is the eldest.

Baby's Details

1. Baby's date of birth? April 2017

2. Baby's gender? Boy Girl

3. Baby's birth weight? grams
 OR lbs oz

4. Length of pregnancy? weeks of gestation

- If unsure, was baby premature (born before 37 weeks)?
 Yes No

5. Was baby admitted to a Special Care Nursery or Neonatal Intensive Care Unit? Yes No

6. Place of birth (e.g. Nambour Hospital or home birth)?

7. Indigenous status of baby?

- Aboriginal
- Torres Strait Islander
- Both Aboriginal & Torres Strait Islander
- Neither Aboriginal nor Torres Strait Islander

8. How many people (not including baby) usually live in baby's household?

- children (0-13 years old)
- adults (14+ years old)

9. What is baby's postcode?

10. What is baby's usual suburb of residence?

Feeding

1. How was baby fed when baby arrived home from hospital (or day 3 after home-birth)?

- | | |
|---|--|
| <input type="radio"/> Breastmilk only | <input type="radio"/> Mostly breastmilk with some infant formula |
| <input type="radio"/> Infant formula only | <input type="radio"/> Mostly infant formula with some breastmilk |

2. How was baby fed over the last 2 days?

- | | |
|---|--|
| <input type="radio"/> Breastmilk only | <input type="radio"/> Mostly breastmilk with some infant formula |
| <input type="radio"/> Infant formula only | <input type="radio"/> Mostly infant formula with some breastmilk |

- If baby had infant formula only over the last 2 days, how old was baby when he/she last had any breastmilk?

- | | | |
|--|--|---|
| <input type="radio"/> never had breastmilk | <input type="radio"/> less than 7 days old | <input type="text"/> <input type="text"/> weeks old |
|--|--|---|

3. Has baby ever had any soft, semi-soft or solid foods (such as mashed food or infant cereal e.g. Farex)?

- Yes
- No

- If YES, how old was baby when baby first ate these foods? weeks old

4. Has baby ever been given any medication or substances that you thought might help baby settle or sleep?

- | | |
|---|---|
| <input type="radio"/> No, baby has only been given milk feeds or baby foods | <input type="radio"/> Nurofen |
| <input type="radio"/> Panadol | <input type="radio"/> Alcohol (e.g. dash of whisky in bottle) |
| <input type="radio"/> Colic/wind drops | <input type="radio"/> Other type(s) of substance, drink or medicine(s): _____ |

Dummy (Pacifier) Use

1. Did baby use a dummy at any time yesterday? Yes No

2. Did baby use a dummy at any time during the last 2 weeks? Yes No

- If YES, **2a) What age did baby first start using a dummy?**

less than 7 days old

weeks old

2b) When does baby usually use a dummy? (mark all that apply)

while awake between feeds

for daytime sleeps

for night-time sleeps

other: _____

2c) Do you use a clip or chain to secure the dummy to baby's clothes, pram or bedding?

Yes No

- If YES, what type of dummy clip or chain do you use?

fabric/material design bead design chain link design other: _____

Health Advice

1. Do you remember receiving any advice about safe sleeping for baby? Yes No

- If YES, who gave you this advice? (mark all that apply)

Doctor/GP Nurse/Midwife

Family/Friends Antenatal classes

Internet Books/Brochures

Previous experience Baby store/shop/expo

Social Media (Facebook, Twitter)

Media (TV, radio, magazines)

Other: _____

2. Who or what was your main source of advice?

3. Would you have liked to receive more information about safe sleeping from your healthcare workers (e.g. Doctor, Midwife)? Yes No

- If YES, what would you have liked to receive more information about? _____

4. Have you ever heard of Sudden Unexpected Death in Infancy (SUDI) which includes Sudden Infant Death Syndrome (SIDS) and fatal sleeping accidents?

Yes No

5. Can you list any key safe sleeping recommendations that reduce the risk of sudden unexpected death in infancy? Yes No

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

6. Do you find any of the recommendations difficult to do with baby? Yes No

- If YES, which recommendation(s) do you find the most difficult and why is it difficult?

Sleeping Room

1. Who slept in the same room as baby for most of last night? (mark all that apply)

- baby slept in room alone
- mother father/partner
- other children, how many?
- other adults, how many?
- pets

2. Who usually slept in the same room as baby during the last 2 weeks for night-time sleeps? (mark all that apply)

- baby slept in room alone
- mother father/partner
- other children, how many?
- other adults, how many?
- pets

3. Does baby sleep in the same room during the day compared to where baby usually sleeps at night-time?

- Always
- Most of the time
- Sometimes
- Never

4. During the last 2 weeks did baby sleep in a room alone for day-time sleeps?

- Always
- Most of the time
- Sometimes
- Never

Sleeping position

Please refer to the below sleep position drawings (A, B, C or D) to answer the following questions:



Lying on front with face down



Lying on front with face to side



Lying on back



Lying on side

1. Which sleep position best describes how baby was placed to sleep last night?

- A
- B
- C
- D

2. Which sleep position best describes how baby was usually placed to sleep over the last 2 weeks?

- A
- B
- C
- D

3. Which sleep position best describes how baby was usually placed to sleep at 4 weeks old?

- A
- B
- C
- D

4. Which sleep position(s) describe how baby has ever been placed to sleep? (tick all that apply)

- A
- B
- C
- D

Bedding environment

1. What items did baby usually sleep with in their bed or sleeping place during the last 2 weeks?

(mark all that apply)

- pillow beanie/hat/hoodie
- sheepskin cot bumper(s)
- blankets doona/duvet
- dummy soft toys (e.g. teddy)
- rolled towels/blanket
- positioning device/wedges
- infant nest (explain type/brand) _____
- other item(s): _____
- none of these

2. What items has baby ever slept with in their bed or sleeping place? (mark all that apply)

- pillow beanie/hat/hoodie
- sheepskin cot bumper(s)
- blankets doona/duvet
- dummy soft toys (e.g. teddy)
- rolled towels/blanket
- positioning device/wedges
- infant nest (explain type/brand) _____
- other item(s): _____
- none of these

3. Did baby sleep on or with a pillow during the last 2 weeks? Yes No

-If YES, 3a) What kind of pillow did baby use?

- a baby pillow an adult pillow

3b) How was the pillow used? (mark all that apply)

- for baby's head for baby's whole body to stop baby rolling other _____

4. Has baby ever slept on or with a pillow? Yes No

5. Did baby sleep with any soft toys (e.g. teddy) during the last 2 weeks? Yes No

Bed type/sleep surface**1. What type of bed or sleeping surface did baby usually sleep on during the last 2 weeks for night time sleeps?**(please mark only one answer)

- | | | |
|---|---|---|
| <input type="radio"/> Cot | <input type="radio"/> Bassinet | <input type="radio"/> Portable/Travel cot |
| <input type="radio"/> Double/Queen/King bed | <input type="radio"/> Single bed | <input type="radio"/> Mattress on floor |
| <input type="radio"/> Waterbed | <input type="radio"/> Couch/Sofa/Armchair | <input type="radio"/> Beanbag |
| <input type="radio"/> Pépi-pod | <input type="radio"/> Infant Hammock | <input type="radio"/> Co-sleeper device/Nest on adult bed |
| <input type="radio"/> Baby capsule/Car seat | <input type="radio"/> Rocker/Swing/Bouncer | <input type="radio"/> Clip on co-sleeper cot/crib |
| <input type="radio"/> Pram or Stroller | <input type="radio"/> Other bed type or sleeping surface: _____ | |

2. What type of bed or sleeping surface did baby usually sleep on during the last 2 weeks for day time sleeps?(please mark only one answer)

- | | | |
|---|---|---|
| <input type="radio"/> Cot | <input type="radio"/> Bassinet | <input type="radio"/> Portable/Travel cot |
| <input type="radio"/> Double/Queen/King bed | <input type="radio"/> Single bed | <input type="radio"/> Mattress on floor |
| <input type="radio"/> Waterbed | <input type="radio"/> Couch/Sofa/Armchair | <input type="radio"/> Beanbag |
| <input type="radio"/> Pépi-pod | <input type="radio"/> Infant Hammock | <input type="radio"/> Co-sleeper device/Nest on adult bed |
| <input type="radio"/> Baby capsule/Car seat | <input type="radio"/> Rocker/Swing/Bouncer | <input type="radio"/> Clip on co-sleeper cot/crib |
| <input type="radio"/> Pram or Stroller | <input type="radio"/> Infant carrier/Baby sling | <input type="radio"/> Rug/Playmat |
| <input type="radio"/> Other bed type or sleeping surface: _____ | | |

3. During the last 2 weeks did baby sleep on the same bed or sleeping surface during the day compared to where baby usually sleeps at night-time?

- Always Most of the time Sometimes Never

4. What type of bed or sleeping surface has baby ever slept on when at home? (mark all that apply)

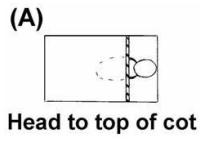
- | | | |
|---|---|---|
| <input type="radio"/> Cot | <input type="radio"/> Bassinet | <input type="radio"/> Portable/Travel cot |
| <input type="radio"/> Double/Queen/King bed | <input type="radio"/> Single bed | <input type="radio"/> Mattress on floor |
| <input type="radio"/> Waterbed | <input type="radio"/> Couch/Sofa/Armchair | <input type="radio"/> Beanbag |
| <input type="radio"/> Pépi-Pod | <input type="radio"/> Infant Hammock | <input type="radio"/> Co-sleeper device/Nest on adult bed |
| <input type="radio"/> Baby capsule/Car seat | <input type="radio"/> Rocker/Swing/Bouncer | <input type="radio"/> Clip on co-sleeper cot/Crib |
| <input type="radio"/> Pram or Stroller | <input type="radio"/> Infant carrier/Baby sling | <input type="radio"/> Rug/Playmat |
| <input type="radio"/> Other bed type or sleeping surface: _____ | | |

5. If not at home (e.g. visiting friends/family) when baby needs a sleep, what type of bed or sleeping surface has baby ever slept on? (mark all that apply)

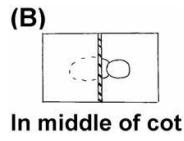
- | | | |
|---|---|---|
| <input type="radio"/> Cot | <input type="radio"/> Bassinet | <input type="radio"/> Portable/Travel cot |
| <input type="radio"/> Double/Queen/King bed | <input type="radio"/> Single bed | <input type="radio"/> Mattress on floor |
| <input type="radio"/> Waterbed | <input type="radio"/> Couch/Sofa/Armchair | <input type="radio"/> Beanbag |
| <input type="radio"/> Pépi-Pod | <input type="radio"/> Infant Hammock | <input type="radio"/> Co-sleeper device/Nest on adult bed |
| <input type="radio"/> Baby capsule/Car seat | <input type="radio"/> Rocker/Swing/Bouncer | <input type="radio"/> Clip on co-sleeper cot/Crib |
| <input type="radio"/> Pram or Stroller | <input type="radio"/> Infant carrier/Baby sling | <input type="radio"/> Rug/Playmat |
| <input type="radio"/> Other bed type or sleeping surface: _____ | | |

Infant placement in cot for sleep

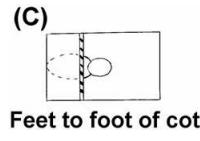
Please refer to the below drawings (A, B, C or D) to answer the following questions:



Head to top of cot



In middle of cot



Feet to foot of cot



Baby did not sleep in cot

1. Which drawing best describes baby's position when baby was placed to sleep in a cot or bassinet last night?

- A B C D

2. Which drawing best describes baby's usual position when placed in a cot or bassinet to sleep over the last 2 weeks for day or night-time sleeps?

- A B C D

Bed sharing**1. Has baby ever slept on any of the following sleep surfaces with another person who was sleeping at any time since birth? (mark all that apply)**

- Cot/Bassinet
- Double/Queen/King bed
- Mattress on floor
- Infant bed on adult bed
- Couch/Sofa/Armchair
- Other bed type or sleeping surface: _____
- Baby has never shared a sleep surface

2. Was it usually planned to share the sleep surface with baby? Yes No Baby has never shared a sleep surface**3. Who has ever shared a sleep surface with baby?**

(mark all that apply)

- Mother
- Other children
- Pets
- Nobody has ever shared a sleep surface with baby

 Father/partner Other adult(s)**4. How often does baby share a sleep surface?**

- every night/normal routine
- most nights (4-6 nights a week)
- some nights (2-3 nights a week)
- occasionally (about once a week or less often)
- other: _____
- Baby has never shared a sleep surface

5. How long does baby usually share a sleep surface? hours Less than 1 hour Baby has never shared a sleep surface**6. Has baby ever shared a sofa or couch with another person who was sleeping at any time?**

- Yes
- No

7. Has baby slept on a sleep surface with another person who was sleeping at any time during the last 2 weeks? Yes No**-If YES, 7a) which of the following sleep surfaces does baby usually share? (mark all that apply)**

- Cot/Bassinet
- Double/Queen/King bed
- Mattress on floor
- Infant bed on an adult bed
- Couch/Sofa/Armchair
- Other bed type or sleeping surface: _____

7b) Who does baby usually share a sleep surface with?

(mark all that apply)

- Mother
- Other adult(s), how many?
- Other children, how many?
- Pets

7c) Where in the shared sleep space does baby usually sleep? (please mark only one answer)

- between 2 people
- between a person and the edge of the bed
- in an infant bed on the adult bed
- on a person
- other: _____

Smoking**1. Who in baby's household smokes? (mark all that apply)**

- Mother
- Father/partner
- Other household members, how many?
- Nobody

2. Where do household members smoke? (mark all that apply)

- inside the house
- outside the house
- in the car
- other: _____
- household members do not smoke

3. Does anyone ever smoke in the room where baby sleeps? Yes No**4. Has baby's mother ever smoked cigarettes?**

- Yes
- No

5. Did baby's birth mother smoke during pregnancy?

- Yes
- No

- If YES, how many cigarettes were smoked per day? cigarettes per day**6. Has baby's mother/primary caregiver smoked any cigarettes since having baby? Yes No*****Immunisations*****1. Was baby immunised at birth (i.e. did baby receive a Hepatitis B vaccination)? Yes No****2. Has baby had their 2 month old immunisations? Yes No****-If NO, do you plan on immunising baby? Yes No**

Infant wrapping and infant sleeping bags

1. Has baby ever slept in an infant sleeping bag or commercially designed sleeping swaddle?

Yes No

- If YES, did the infant sleeping bag or swaddle have fitted neck and arm holes? Yes No

2. In the last 2 weeks did you ever wrap baby for sleep time? Yes No

- If YES, 2a) How many weeks old was baby when you started wrapping baby?

less than 1 week old

weeks old

2b) What material do you usually use to wrap baby?

cotton sheet/muslin cloth or sheet

flannel sheet

blanket/bunny rug

other: _____

2c) When wrapping baby for sleep do you usually:

wrap with arms in

wrap with arms out

2d) When wrapping baby for sleep do you usually:

- wrap below shoulders
- wrap above shoulders but below chin
- wrap covering back of baby's head

2e) How do you usually wrap baby for sleep?

- very tight firm loose very loose

2f) How often do you wrap baby?

- almost all the time (when both awake and asleep)
- for every sleep time
- for most sleeps (both night and day)
- mostly night-time sleeps
- mostly day-time sleeps
- other: _____

2g) When do you plan to stop wrapping baby?

- around 3 months
- around 4 months
- around 5 months
- around 6 months
- when baby is more than 6 months old
- as soon as baby shows signs of being able to roll
- haven't thought about it/ don't know

Adult worn infant carrier or sling

1. Have you ever received advice or read information about using an infant carrier or baby sling? Yes No

2. Have you ever used a baby sling or infant carrier with baby? Yes No

- If YES, 2a) Which picture below best matches the style carrier/sling you usually use?

(please mark only one answer)

A



Sling (over shoulder) style

B



Carrier (pack) style

C



Wrap-around style

Other _____

2b) Has baby ever slept in the carrier or sling? Yes No

2c) Can baby's chin touch his/her chest when in the carrier? Yes No

3. Have you ever heard of the T.I.C.K.S principle when using a baby sling or infant carrier? Yes No

Heating/Cooling

1. Was baby's room heated or cooled at any time last night? Yes No

- If YES, what type of heating or cooling was used?

thermostatic controlled heating other type of heating _____

thermostatic controlled cooling other type of cooling _____

Baby monitors**1. Do you use a baby monitor while baby is sleeping?** Yes No

- If YES, **1a)** What type of baby monitoring system do you use? (mark all that apply)

- Sound monitor
- Video monitor
- Movement/Breathing mat or sensor
- Other: _____

1b) Who recommended using a baby monitor?

- Advice from doctor/health professional
- Received as a gift
- Parental choice
- Friend or family member
- Other: _____

Other care practices**1. Have you ever covered baby's pram, carrier or sling with a wrap or blanket to block out light/distractions to help baby sleep?** Yes No**2. Does baby ever wear a necklace (e.g. an amber teething necklace)?** Yes No

- If YES, does baby ever wear the necklace during sleep? Yes No

Baby's health**1. How long was baby in hospital after birth before being discharged home?**

- Baby was not born in/taken to hospital at birth
- Less than 1 day old
- days old
- 100 or more days old
- Baby is still in hospital – has not yet been home

2. Has baby stayed overnight in hospital (e.g. in a children's ward) for observation or treatment since being discharged home after birth? Yes No

- If YES, **2a)** How old was baby when admitted to hospital?

- less than 1 week old
- weeks old

2b) What was the main reason for baby going to hospital?

- breathing problems/respiratory illness
- feeding problems/weight loss
- high temperature pain
- vomiting/diarrhoea jaundice
- other: _____

2c) Where did baby sleep while in hospital? (mark all that apply)

- plastic bassinet hospital cot
- baby capsule/car seat pram or stroller
- hospital bed with mother/caregiver
- sofa chair/pull-out parent bed with mother/caregiver
- other: _____

Recommendations**Which sleep position(s) is recommended for healthy babies?** (mark all that apply)

- | | |
|--|--|
| <input type="radio"/> Lying on back on flat surface | <input type="radio"/> Lying on back with head elevated (i.e. tilted surface) |
| <input type="radio"/> Lying on side on flat surface | <input type="radio"/> Lying on side with head elevated |
| <input type="radio"/> Lying on tummy/front on flat surface | <input type="radio"/> Lying on tummy/front with head elevated |
| <input type="radio"/> I'm not sure/ don't know | |

Which sleep position(s) is recommended for babies with reflux? (mark all that apply)

- | | |
|--|--|
| <input type="radio"/> Lying on back on flat surface | <input type="radio"/> Lying on back with head elevated (i.e. tilted surface) |
| <input type="radio"/> Lying on side on flat surface | <input type="radio"/> Lying on side with head elevated |
| <input type="radio"/> Lying on tummy/front on flat surface | <input type="radio"/> Lying on tummy/front with head elevated |
| <input type="radio"/> I'm not sure/ don't know | |

Select the answer you believe to be the main key messages for safe sleeping: (please mark only one answer)

- Immunise baby; Sleep baby on back or side; Keep baby smoke-free; Keep head and face uncovered; Use a dummy; Breastfeed baby; Room-share with baby
 - Sleep baby on back; Keep baby smoke-free; Keep head and face uncovered; Bed-share with baby; Safe sleep environment night and day; Immunise baby
 - Immunise baby; Sleep baby on back or side; Keep baby smoke-free; Use a dummy; Safe sleep environment night and day; Avoid baby overheating; Breastfeed baby
 - Sleep baby on back; Keep head and face uncovered; Keep baby smoke-free; Safe sleep environment night and day; Room-share with baby; Breastfeed baby
 - None of the above
 - I'm not sure/don't know
-

Caregiver's Details

1. Mother's date of birth? / /

2. Mother's Indigenous status?

- Aboriginal
- Torres Strait Islander
- Aboriginal & Torres Strait Islander
- Neither Aboriginal or Torres Strait Islander

3. Mother's country of birth?

- Australia
- Other: _____

4. Mother's current marital status:

- Married De facto
- Single (never married)
- Single (separated, divorced)
- Single (widowed)

5. Is this your first baby?

- Yes No

- If No, how many other children have you given birth to? children

6. Do you have a healthcare card? Yes No

7. What is your highest level of completed education?

- <Year 10 Year 10 Year 11 Year 12
- TAFE University Post Graduate Studies

8. Have you had an alcoholic drink of any kind since the birth of baby? Yes No

- If YES, how often since baby's birth have you consumed alcohol?

- every day
- 5-6 days a week
- 3-4 days a week
- 1-2 days a week
- 2-3 days a month
- about 1 day a month
- less than once a month

9. Do you take any medication or drugs (either prescribed, over the counter or illicit) that sometimes makes you drowsy or sleepy? Yes No

- If YES, please list types/names of medications/drugs:

Other

Is there anything else you would like to share with us about baby's care and sleeping routines?

Thank you for participating in the 2017 Queensland Infant Care Study.
Your time and contribution is greatly valued and appreciated.

If you are interested in receiving information about future research projects exploring the care of infants and children please provide your contact details through our secure link at <https://survey.usc.edu.au/opinio/s?s=6712>.

Online Supplemental Table – Univariable analysis of characteristics and awareness of key messages

	Prompted awareness: Multi-choice selection of the current 6-key safe sleeping program messages			
	Total	Incorrect / unsure	Correct selection of messages	p-value
	n (%)	n (%)	n (%)	
Maternal age (n=3252)				
24 years or younger	271 (8.3)	128 (47.2)	143 (52.8)	<0.0001
25 years or older	2981 (91.7)	726 (24.4)	2255 (75.7)	
Parity (n=3290)				
Primiparous	1496 (45.5)	386 (25.8)	1110 (74.2)	0.5362
Multiparous	1794 (55.5)	480 (26.8)	1314 (73.2)	
Marital status (n=3284)				
Single [never married, separated, widowed]	159 (4.8)	68 (42.8)	91 (57.2)	<0.0001
Partnered [married/de facto]	3125 (95.2)	796 (25.5)	2329 (74.5)	
Country of birth (n=3284)				
Overseas born	730 (22.2)	218 (29.9)	512 (70.1)	0.013
Australian born	2554 (77.8)	646 (25.3)	1908 (74.7)	
Indigenous status (n=3267)				
Aboriginal and/or Torres Strait Islander	62 (1.9)	29 (46.7)	33 (52.2)	0.0002
Neither Aboriginal nor Torres Strait Islander	3205 (98.1)	829 (25.9)	2376 (74.1)	
Education level (n=3284)				
Less than tertiary completed	834 (25.4)	337 (40.4)	497 (59.6)	<0.0001
Tertiary completed	2450 (74.6)	524 (21.4)	1926 (78.6)	
Smoking status while pregnant (n=3282)				
Smoked during pregnancy	135 (4.1)	60 (44.4)	75 (55.6)	<0.0001
Smoke-free during pregnancy	3147 (95.9)	805 (25.6)	2342 (74.4)	
Household smoke exposure (n=3292)				
Exposed	536 (16.3)	200 (37.3)	336 (62.7)	<0.0001
Smoke-free	2756 (83.7)	669 (24.3)	2087 (75.7)	
Socioeconomic status* (n=3287)				
Most disadvantaged quintile	491 (14.9)	170 (34.6)	321 (65.4)	<0.0001
Not most disadvantaged quintile	2796 (85.1)	729 (26.1)	2067 (73.9)	
Geographical location† (n=3287)				
Very remote, remote, outer regional	525 (16.0)	166 (31.6)	359 (68.4)	0.0167
Inner regional, major city	2762 (84.0)	733 (26.5)	2029 (73.5)	
Model of maternity care (n=3303)				
Public	1926 (58.3)	618 (31.1)	1308 (67.9)	<0.0001
Private	1377 (41.7)	289 (21.0)	1088 (79.0)	
Antenatal care‡ (n=3292)				
Adequate	3020 (91.7)	795 (26.3)	2225 (73.7)	0.0051
Not adequate	272 (8.3)	93 (34.2)	179 (65.8)	
SCN/NICU admission (n=3303)				
Yes	522 (15.8)	151 (28.9)	371 (71.1)	0.3217
No	2781 (84.2)	746 (26.8)	2035 (73.2)	
Gestation (n=3286)				
Term, ≥37 weeks	3074 (93.5)	815 (26.5)	2259 (73.5)	0.0772
Preterm, <37 weeks	212 (6.5)	68 (32.1)	144 (67.9)	
Heard of terms SUDI & SIDS (n=3317)				
No	139 (4.2)	66 (47.5)	73 (52.5)	<0.0001
Yes	3178 (95.8)	829 (26.1)	2349 (73.9)	
Nurse/Midwife main source of advice (n=3228)				
No	1655 (51.3)	441 (26.6)	1214 (73.3)	<0.0001
Yes	1573 (48.7)	419 (26.6)	1154 (73.4)	
Infant usually supine to sleep (n=3310)				
Yes	2746 (83.0)	672 (24.5)	2074 (75.5)	<0.0001
No	564 (17.0)	215 (38.1)	349 (61.9)	

Ever non-supine sleep position (n=3307)				
Yes	1474 (44.6)	453 (30.7)	1021 (69.3)	<0.0001
No	1833 (55.4)	432 (23.6)	1401 (76.4)	
Cot usually free of soft, bulky bedding (n=3301)				
Yes	2061 (62.4)	451 (21.9)	1610 (78.1)	<0.0001
No	1240 (37.6)	434 (35.0)	806 (65.0)	
Any breastmilk at 8 weeks (n=3321)				
Yes	2751 (82.8)	652 (23.7)	2099 (76.3)	<0.0001
No	570 (17.2)	254 (44.6)	316 (55.4)	
Usually sleeps in room alone (n=3306)				
Yes	1252 (37.9)	382 (30.5)	870 (69.5)	0.0002
No	2054 (62.1)	504 (24.5)	1550 (75.5)	
Infant ever shared sleep surface (n=3296)				
Yes	2525 (76.6)	683 (27.1)	1842 (73.0)	0.1851
No	771 (23.4)	190 (24.6)	581 (75.4)	

*The Socio-Economic Indexes for Areas (SEIFA) – Index of Relative Socio-Economic Advantage and Disadvantage Quintile was used to determine the socioeconomic status of the area where the infant's family reported to live. For analysis a dichotomous variable was used either being in the most disadvantaged quintile or not.¹

¹The Accessibility/Remoteness Index of Australia (ARIA+) divides Australia into classes of remoteness based on relative access to services and was used to assess and report geographical location. To create a dichotomous variable for analysis geographic location was grouped major city and inner regional, and outer regional, remote and very remote.²

²The Kotelchuck Adequacy of Prenatal Care Utilisation Index was used to determine adequacy of antenatal care. Gestational at first antenatal care, number of antenatal visits and gestation at delivery were used to index care as adequate or not adequate. To create a dichotomous variable 'adequate' grouped "adequate-plus" and "adequate," and 'not adequate' grouped "intermediate" and "inadequate".³

References

1. Australian Bureau of Statistics [ABS]. 2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016 Canberra: Australian Bureau of Statistics; 2018 [Available from: <https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001> accessed 5 September 2019.
2. Australian Bureau of Statistics [ABS]. 1270.0.55.005 - Australian Statistical Geography Standard (ASGS): Volume 5 - Remoteness Structure, July 2016 Canberra: Australian Bureau of Statistics; 2018 [Available from: <https://www.abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure> accessed 5 September 2019.
3. Kotelchuck M. An evaluation of the Kessner Adequacy of Prenatal Care Index and a proposed Adequacy of Prenatal Care Utilization Index. *Am J Public Health* 1994;84(9):1414-20. doi: 10.2105/ajph.84.9.1414