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Wrapping and Swaddling Infants: Child Health Nurses’ Knowledge, Attitudes and Practice

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Abstract
Infant wrapping and/or swaddling is an evidence-based care practice that when applied appropriately can be a strategy for settling an infant and promoting supine sleep positioning as recommended for the reduction of sudden unexpected deaths in infancy (SUDI). This study aimed to describe the knowledge, attitudes and practices of Child Health Nurses (CHN) relating to the advantages and disadvantages of wrapping; principles of safe infant wrapping, and parent education about infant wrapping as a settling strategy.

Design
Using a descriptive, cross-sectional survey design the knowledge, attitudes and self-reported practices of CHNs working within 9 health service districts throughout South East Queensland, Australia were explored.

Results
Conducted at a time when no state-wide guidelines for infant wrapping existed and achieving an excellent response rate from participants (161, 89%), this study demonstrated a wide variation in knowledge, attitudes and practices in relation to wrapping as a strategy to promote infant sleep and to encourage babies to sleep on their backs, consistent with public health recommendations.

Conclusions
Study results identified a need for the development of evidence-based practice guidelines for CHNs to promote consistency in practice, parent advice and education that would help to further reduce the risk of SUDI. There is a need for further investigation into the impact that a targeted educational intervention based on evidence-based guidelines for safe infant wrapping would have on CHN knowledge and practice.

Implications for clinical practice
• Child health nurses are an important information source for parents
• Prone position is a risk factor for SUDI
• Wrapping strategies based on principles of safe infant wrapping can assist parents to settle their babies in the recommended supine infant sleep position
• Evidence-based information and guidelines will promote consistent practice by CHNs
• Consistent, evidence-based information use by parents in caring for their baby will reduce the risk of SUDI

Keywords: Wrapping; swaddling; sleep positioning; safe sleep; SUDI; SIDS
INTRODUCTION
Managing unsettled infant behaviour and promoting infant sleep are issues that health professionals who work with parents of young infants around the world routinely address. Health professionals who provide guidance to parents relating to these issues also need to support public health recommendations that promote evidence-based safe infant sleep practices. Prone sleep positioning for infants is a known risk factor for sudden infant death\(^1\). The use of infant wrapping, also commonly termed *swaddling*, has been identified as a strategy that can be used to calm infants, improve settling and promote supine sleep\(^2\).

Background
In Australia, the state of Queensland has reported a rate of prone sleeping of approximately 12% for infants aged 3 months; a figure substantially higher than rates reported by other states and territories\(^3,4,5\). Queensland has also experienced a higher than national rate of infant mortality attributed to sudden unexpected deaths in infancy (SUDI) including Sudden Infant Death Syndrome (SIDS) and fatal sleeping accidents\(^6,7\) since the first Australian Reducing the Risk of SIDS campaign in 1991 (See Table 1). Given the key role health professionals play in health promotion\(^8\), the extent to which Child Health Nurses (CHNs) were aware of, and utilise, infant wrapping and/or swaddling as a sleep strategy in their parenting support and education was explored.

*Table 1 should appear here*
Literature Review

Wrapping and/or swaddling in the supine position is an ancient practice of encircling an infant in a cloth or blanket (with head exposed) to restrict movement. A recent systematic review highlighted both the potential advantages and disadvantages of this practice. There is evidence that wrapping increases sleep, reduces motor activity, reduces startles, and lowers heart rate variability, without reducing responsiveness to stimulation. Wrapping also improves neuromuscular development, facilitates better motor organisation, and increases self-regulatory ability in preterm infants. Following painful stimuli, infants can be soothed using wrapping and have improved temperature control. When compared with massage as a treatment for excessively crying infants who have cerebral damage, swaddling achieved better outcomes.

Most importantly, wrapping and/or swaddling infants in the supine position has been associated with a reduced risk of SUDI, including SIDS. The mechanism by which this is achieved is believed to be a reduced risk of the infant rolling to the prone position, and reduced likelihood of the infant’s head being covered by bedding; both established risk factors for sudden unexpected infant death. The success in the reduction of sudden infant death internationally (estimated most recently to be 83% in Australia) has been attributed to public health campaigns which advise parents to place their babies on their back to sleep. A meta-analysis of 19 retrospective case-controlled studies demonstrated an almost three-fold increased risk of sudden infant death associated with infants sleeping in the
prone position\textsuperscript{26}, findings which have been supported in subsequent investigations of the role of sleep positioning in SUDI\textsuperscript{26,27,28}.

There are, however, potentially negative aspects of wrapping and/or swaddling that need to be considered. Ponsonby and colleagues reported that an infant who was swaddled and positioned prone had a twelve-fold increased risk of SIDS compared with non-swaddled prone infants for whom the risk of SIDS was increased by three times\textsuperscript{22}. Adverse outcomes associated with wrapping include increased respiratory infections with tight swaddling\textsuperscript{13,14,29}; increased developmental dysplasia of the hip when lower limb flexion is overly restricted\textsuperscript{30,31,32}; hyperthermia when baby is overdressed and wrapped, or inappropriate wrapping material is used especially if the infant’s head is also covered\textsuperscript{2}; and delayed postnatal weight gain if the infant is separated from the mother immediately after birth\textsuperscript{33}. Thus, it is critical that the correct technique for swaddling is used. Wrapping and/or swaddling does not negatively influence the incidence of rickets\textsuperscript{34} or breastfeeding outcomes\textsuperscript{33}.

More recently the need for differentiation between the types of wrapping or swaddling practices used within a study has been highlighted. British research reported an increased risk of sudden infant death with swaddled infants however did not account for known risk factors (e.g. sleep position, bed-sharing while swaddled) or consistency with safe infant wrapping principles in the analyses\textsuperscript{35}. The current statement on swaddling compiled by the International Society for the Prevention of Infant Death (ISPID)\textsuperscript{36} includes the evidence thus far surrounding ‘changes’ in sleep habits. One physiological study with a small sample has identified
that arousability is reduced by swaddling when the practice is newly introduced in older infants in a way that is not seen when infants are swaddled from birth\textsuperscript{37}. Further research needs to be conducted to replicate these findings; however it does have clinical implications for practitioners in relation to the timing of changes to sleep practices\textsuperscript{36}.

Overall, there are several important advantages of wrapping and/or swaddling in the supine position, the most important being a reduction in sudden infant death. The disadvantages of infant wrapping and/or swaddling have been identified as being predominantly related to the use of incorrect swaddling practices\textsuperscript{2,38}, highlighting the importance of evidence-based safe sleep and settling information being provided to parents and carers. Wrapping and/or swaddling is a widely used practice that is promoted by CHNs, however up until the time that this study was conducted, there were no specific guidelines for clinical practice. At the time of this study, resources available to CHNs included the Karitane pamphlet on wrapping (Karitane 2003)\textsuperscript{39} and, immediately prior to this study, a position statement released by SIDS and Kids that supported infant wrapping as a strategy to support safe sleep positioning (2005)\textsuperscript{40} (See Table 2). Karitane nurses are nurses trained in the care of young babies and their mothers according to the principles of the Plunket Society, New Zealand\textsuperscript{39}. There was no specific State (Queensland Health) or local policy to guide clinical practice. Interestingly the Karitane pamphlet also highlighted that there was (at the time), little scientific information which explained why people wrap babies and nor was there any one correct way\textsuperscript{39}. 
Statement of the Problem

The CHN is an important source of information regarding safe sleeping and settling strategies for parents. The need for this study originated in the development of a clinical pathway for settling infants under 3 months of age that had been introduced into early parenting and child health centres within the study region. Anecdotally, nurses displayed varying levels of knowledge and differing attitudes to wrapping and/or swaddling babies. The aims of this study were therefore to describe the knowledge, attitudes and practices of CHNs relating to

1) advantages and disadvantages of wrapping
2) knowledge of the principles of safe wrapping
3) techniques used in wrapping
4) parent education about wrapping as an infant settling strategy and SUDI risk reduction strategy

THE STUDY

Methodology

Design

This study used a descriptive, cross-sectional survey design to describe the knowledge, attitudes and self-reported practices of CHNs in South East Queensland in relation to wrapping and/or swaddling.
Questionnaire Development and Pilot

No existing survey tools were identified that specifically addressed the topic under investigation. Questions were developed following an examination of the literature, and themes identified through focus group sessions conducted with a sample of CHNs working in two child health centres. The questionnaire was based on a previously successful format which examined safe infant sleeping priorities. To establish content validity, the instrument was first examined by an expert panel comprising nurse researchers, educators, managers and clinicians. The instrument was tested according to the Lynn method for clarity, apparent internal consistency and content validity. Language, wording, appropriateness, relevance and comprehensiveness of the questionnaire items were examined. Whilst there were some individual comments about completion of the demographic questions and interpretation of the knowledge items; consensus by the panel was achieved for 83% of the items included, therefore no changes were made to the questionnaire. In addition to demographic questions (n=13), the questionnaire comprised multiple choice (n=24) and short answer questions (n=1) relating to knowledge and attitudes (n=15) and practice (n=11). Content included advantages and disadvantages of wrapping/swaddling, infant settling strategies, wrapping materials and styles, principles of safe infant sleeping, sources of knowledge, and parent advice. The survey was piloted amongst a sample of CHNs from three facilities within the study region (n=30). Pilot results (n=24, 80% response rate) supported both the appropriateness of the tool and highlighted the need for further investigation of this subject.
Sample/Participants

A purposive sample was drawn from the target population of registered nurses working in child health nursing roles within one of nine health service districts throughout South East Queensland, Australia. Participants were identified by their area managers in collaboration with the research team. Eligible participants (n=181) worked within the selected study areas in a permanent or temporary full-time, part time or casual capacity, and were rostered to work at the time of recruitment (i.e. not on maternity, annual, long service or extended sick leave).

Data Collection

Each participant was provided with a participant information sheet and questionnaire distributed via institutional mail or by postal services. Completed questionnaires were returned either via reply paid envelopes or to sealed collection points. Participants were recruited from the nine participating districts during an 8 week period, July-August 2005. The survey took approximately ten minutes to complete.

Ethical Considerations

Ethical approval from each of the nine participating Health Services Districts and organisational Human Research Ethics Committees was obtained prior to study commencement. Participant consent was implied by the return of a completed survey.
Data Analysis

Medians, inter-quartile ranges (IQR), frequencies and percentages were used to report the central tendency, spread and empirical distributions of the categorical variables. Statistical computations and comparisons (Chi Squared) were conducted using the SPSS statistical software package. An alpha level of p<0.05 was considered statistically significant.

FINDINGS

Response rate

The response rate was 89%, with 161 of the 181 surveys being completed and returned.

Demographics

Respondents were all female, aged predominantly 35-54 years, and most identified as being Australian born (138, 86%). There was an equal distribution of full-time and part-time workers. Most participants held specialist level positions (Clinical Nurse or above; 129, 80%) and had been working with parents of young children for ten or more years (145, 90%). The majority held a child health nurse qualification (151, 94%) and all but two participants were involved in parent education (See Table 3).

Table 3 should appear here.
Preference in terminology and sources of knowledge

Participants identified a clear preference for the term ‘wrapping’ over ‘swaddling’ (116, 72% Vs 25, 16%) with 90 (56%) participants indicating they believed there was a difference between the terms. The term wrapping will be used herein for ease of reporting results.

Over half of respondents (91, 57%) identified that they were from a culture that did not traditionally wrap babies. Although a third of the sample identified that they were from a culture that traditionally practised wrapping in the home, only 19% (30) had learnt about wrapping from their immediate family. Other sources of knowledge about wrapping were identified as originating from midwifery (93, 58%), child health (22, 14%), or paediatric nursing (9, 6%) practice.

Knowledge and Attitudes

Participants responded to questions about the usefulness, advantages and disadvantages associated with wrapping babies.

Most participants identified that the practice of wrapping was most helpful for babies aged between birth and three months (144, 89%). More than 70% of participants identified positive effects of infant wrapping including increased feelings of security (138, 86%), calming (133, 83%), reduced startle reflex (118, 73%) and improved settling to sleep (110, 68%). Less well identified were advantages relating to increased duration of sleep (80, 50%), reduced crying (53, 33%), reduced colic symptoms (16, 10%) and improved neuromuscular and behavioural development in
premature babies (15, 9%). Less than a third of participants were aware that wrapping was an evidence based strategy to support supine positioning (49, 30%) (See Figure 1).

Figure 1 should appear here

Participants identified their main concern with wrapping as being the risk of overheating (115, 71%). The risk of developing an infant sleep association (68, 42%); impaired normal development (53, 33%); increased risk of SIDS (42, 26%); compromised respiratory function (33, 21%); increased risk of suffocation (32, 20%), and hip dysplasia (9, 6%) were each identified as potential risks associated with infant wrapping. Less than half (66, 41%) of the participants correctly identified that there were no negative effects as long as the infant was ‘safely’ wrapped.

When asked to identify what type of material was suitable for wrapping a baby, more than 90% of participants (144, 93%) identified that the appropriate material for a wrap would be a light cotton or muslin, with 28 (17%) considering that flannelette or cotton air cell blankets were also appropriate. Over half the respondents (92, 57%) correctly identified that the subtropical Queensland climate did not pose a problem as long as the infant was lightly clothed in summer, while 45 (28%) participants indicated the heat in summer, the heat experienced in Queensland’s north, or the heat in general, may impact decision-making related to the appropriateness of wrapping a baby.
Participants were asked if they were familiar with ‘safe’ and ‘unsafe’ wrapping practices. Most participants (114, 71%) indicated that they knew the difference between safe versus unsafe wrapping techniques however 32 (20%) respondents were unsure. Participants were asked to express their understanding of the SIDS and Kids guidelines regarding wrapping in the context of parent education if parents chose to wrap their baby. Less than half (46% or less) of the sample correctly identified SIDS and Kids recommendations relating to safe wrapping in terms of advised infant sleep position. Less than a third (47, 29%) of participants were aware that SIDS and Kids supported the practice of wrapping as an infant settling strategy (See Figure 2) while a quarter (40, 25%) were unsure of existing guidelines. Participant education levels or years of experience were not significantly associated with awareness of SIDS and Kids recommendations.

Figure 2 should appear here

Prior to this study no official policy guidelines existed in relation to wrapping practices in Queensland; an issue identified by 121 (75%) respondents. Most respondents (147, 91%) agreed that development of evidence-based policy guidelines would be useful in supporting their clinical practice.

Practice

Most CHNs (126, 78%) reported that they would initiate wrapping as an infant settling strategy if appropriate to the family’s circumstances. Child health nurses were significantly more likely to discuss the practice and aspects of wrapping with
parents of an infant less than 3 months old on a ‘sometimes’ to ‘frequently’ basis (139, 86%) compared to parents of an older infant (3-6 months) (69, 43%) (Chi-squared test statistic = 51.08, df 9, p<0.0001).

The most frequently identified wrapping style was for the wrap to be firmly or tightly folded around the infant and loosened with development to allow arm movement (45, 28%), with the arms flexed and loosely contained (59, 37%). Approximately one half of the respondents (84, 52%) responded with a wrapping style consistent with evidence. The remaining 48% (77) were unsure, did not have a style of wrapping, or selected a loosely folded wrap; responses that were not consistent with evidence-based principles of safe wrapping.

For parents who chose to wrap their baby, few CHNs reported that they would discourage the practice (9, 6%) although some would also suggest alternative settling strategies (65, 40%). Almost a third identified that they would support the parent’s decision (46, 29%) and most would discuss safe wrap techniques with the parents (129, 80%). Over half (92, 57%) the group identified they would specifically discuss SIDS and Kids Australia recommendations; but interestingly there were just 72 (45%) respondents who had demonstrated awareness of a SIDS and Kids position statement about infant wrapping.

To further determine CHN wrapping practice with regard to infant age, participants were asked what their recommendations would be for management of a situation where a two month old was being settled in the prone position by his/her parents. Most (101, 63%) identified that they would recommend to the parents the use of the supine sleep position, with the infant wrapped, as an alternative to prone
positioning. However 60 (37%) of the sample either would not, or were unsure about, recommending wrapping in this situation. When asked what their parent advice would be for a similar situation but with an older baby (four months) who was rolling to prone during sleep, only 11 (7%) participants reported that they would recommend a trial of wrapping to keep the infant on the back during sleep (See Figure 3). Almost a third (50, 31%) would not recommend wrapping to support back positioning for this older infant. Child health nurses were significantly more likely to advise parents to try wrapping to support supine positioning for a younger infant aged 2 months than compared to advice for parents with an older infant aged 4 months or more (63% Vs 7%) (Chi-squared test statistic = 15.45, df 4, p=0.004).

Figure 3 should appear here

DISCUSSION

The findings from this study identified a wide variation in CHNs’ knowledge, attitudes and practices relating to wrapping as a strategy to a) promote infant settling and sleep, and b) encourage babies to sleep on their backs, consistent with public health recommendations.

Knowledge & Attitudes

Most participants reported having developed their knowledge base about wrapping from their practice. At the time of this study there were no state-wide policies or guidelines for infant wrapping in place. In the absence of guidelines it is possible that this informal passage of knowledge was neither comprehensive nor evidence based. SIDS and Kids Australia had developed a position statement supporting infant
wrapping according to safe principles as a strategy to support supine positioning for sleep in 2005\textsuperscript{40}, available on their website, but participants demonstrated poor awareness of this.

Most respondents indicated that they were aware of safe and unsafe wrapping practices, however less than half of the group were aware of the SIDS and Kids position statement and a quarter reported use of a wrapping style that was not recommended by evidence at the time. The suitability of light cotton and muslin wraps for wrapping babies in most climates was well known however a third of nurses reported that the Queensland climate inhibited the utilisation of wrapping as an infant care strategy. Dressing an infant appropriate to the environment is an important consideration for caregivers as overheating is a risk for sudden infant death if an infant is too heavily dressed under a wrap, particularly if the head is also covered\textsuperscript{51}. For warmer climates, minimal dressing of an infant prior to wrapping (singlet and nappy) is advised, and does not preclude wrapping\textsuperscript{52}.

Most nurses indicated that the first three months of life was the developmental period in which wrapping a baby was the most helpful. The term ‘wrapping’ was preferred in practice with the terms themselves invoking responses whereby ‘swaddling’ was generally interpreted as being a more restrictively applied cloth, or alternatively, a very loose bundling of material, with or without head covering. Only half of the respondents identified the preferred response of ‘wrapping’ being ‘cloth firmly folded around the infant’. These findings did indicate that education regarding the practice was necessary to avoid the unsafe extremes (wrap being applied too loosely or too tightly)\textsuperscript{53}. A variety of applications of the practice of wrapping were
identified with over half of respondents using a technique that allowed for infant
development in which there was increasing arm freedom or arm placement near the
mouth before ceasing wrapping altogether. Wrapping techniques need to be tailored
to the infant and individual practitioners may have their own preferences in the style
used, however practice should be consistent with basic principles of safe wrapping.
Most nurses correctly identified the absence of state organisational or district policy
guidelines regarding the practice of infant wrapping while the vast majority (>90%)
reported that evidence-based guidelines should be developed. These results suggest
that nurses may be more inclined to advocate and implement an evidence-based
practice such as safe infant wrapping if policy guidelines have been developed,
endorsed and disseminated by their organisation.

**Practice**

The majority of study participants were very experienced in child health and nearly
all worked within roles that involved education. The potential for this practice group
to impart information and support recommendations within the community is great.
The importance for the information to be evidence-based and current is therefore
vital. Most nurses advocated wrapping as a settling and sleep strategy from
‘sometimes’ to ‘frequently’ in their practice, and were more likely to discuss these
strategies with parents of younger infants, aged less than 3 months. Most CHNs
indicated that if a parent chose to wrap their infant that they would discuss safe
wrapping techniques, while interestingly only a third of respondents identified that
they would actively support the parent’s decision to wrap.
Most CHNs indicated they would recommend infant wrapping as a strategy to support supine sleep as an alternative to prone positioning for a two month infant; however a considerable proportion (about a third) would not suggest use of this strategy to parents as an alternative to prone, despite the evidence to support it\(^2,5^4\).

Sudden infant deaths occur most frequently in the first six months of life, with a peak between 2 to 4 months of age\(^5^5\). With indisputable evidence that supine sleep positioning has been a key contributor in the reduction in sudden infant deaths globally, all caregivers should be made aware of the importance of settling babies to sleep on their back, from birth\(^25,5^6\). Wrapping is a safe and effective strategy to promote supine sleep positioning that CHNs should be aware of to share with parents, particularly if they are having difficulty with infant settling and sleep.

CHNs were also significantly less likely to suggest to parents a trial of wrapping for an older infant of four months who was rolling prone during sleep, compared to younger infants, aged two months. However, evidence suggests that wrapping is a strategy that potentially has a role in situations where supine sleep positioning could be prolonged if the infant was wrapped appropriately for their developmental level\(^2,5^4\). For example, once the startle reflex disappears the baby’s legs and torso can be wrapped firmly (not tightly) in a flexed position with hands free to facilitate self-soothing behaviours to promote supine settling and sleep\(^5^7\).

**STRENGTHS AND LIMITATIONS**

This study achieved an excellent response of 89%, and was representative of the knowledge, attitudes and practices of CHNs from nine health services in south east
Queensland. It provided important benchmarking data for infant wrapping prior to the development of practice guidelines. As the study was conducted amongst a child health nursing sample, further research amongst other nursing, allied and medical health professionals who provide education and advice to parents of infants would also be valuable. The timing of this study was opportune, as findings were used to inform the development and implementation of state-wide policy relating to safe infant care practices to reduce the risk of sudden unexpected deaths in infancy\(^9\) and directly contributed to the development of a SIDS and Kids Information statement\(^57\) ‘Wrapping Infants’. Health professional practice tools and educational materials that incorporate safe infant wrapping practices have been developed in collaboration with research team members, health department policy advisors and SIDS and Kids, and have been reported elsewhere\(^58\). While surveys have been demonstrated to be a valid and reliable method of obtaining information about the knowledge and attitudes of respondents relating to a particular practice issue\(^46,47\), there are inherent difficulties recognised with the collection of information in this manner due to the need to self-report practice data\(^48\). Audits of practice are also required but were beyond the scope of this cross-sectional survey study.

**CONCLUSIONS**

This study aimed to investigate the extent to which health professionals were aware of, and utilise, infant wrapping as a safe settling and sleep strategy. With the incidence of prone sleep positioning in the region where this study was conducted being one of the highest in Australia\(^48\), and with Indigenous infants significantly less
likely to be placed in the recommended supine sleep position than non Indigenous infants\textsuperscript{49}, this issue has important practice implications. Many parents choose to place infants prone to sleep because they perceive it as being more comfortable and conducive to improved sleep for the infant\textsuperscript{50}. Some parents may choose prone positioning because they are unaware of an alternative settling strategy. However, wrapping in the supine position calms infants and improves settling to sleep facilitating maintenance of the supine sleep position, a recognised risk reduction factor for sudden infant death\textsuperscript{20-22}. Of particular concern was that, despite the evidence, almost a third of nurses would not recommend wrapping to encourage supine sleep with two month old infants whose parents are choosing to settle them prone when those infants are within the developmental age associated with the greatest risk of sudden unexpected deaths in infancy; between 2-4 months. This finding supports previous studies which have suggested that contributing factors to Queensland’s high prone sleeping rate for young babies may be due to poor awareness of, or a failure to promote, safe infant settling and sleep strategies\textsuperscript{3,6,41}, which include safe infant wrapping.

Study results highlighted areas for knowledge and practice improvements in child health nursing related to the practice of wrapping infants, especially as a strategy to support the use of the supine sleep position for young infants less than 6 months of age. Knowledge content areas which required improvement include: principles of safe wrapping; advantages of safe infant wrapping; potential disadvantages if safe wrapping principles are not followed; and appropriate infant age, developmental stage, wrapping materials and styles. Practice areas which reported a wide variation
in responses included parental advice, support and frequency of education provision, particularly where it may be appropriate to suggest to a trial of infant wrapping to assist settling and support the supine sleep position as an alternative to prone; consistent with safe sleeping recommendations.

Child health nurses are a primary resource for support and advice for parents. This study provides the first Australian benchmarking data of nursing practice related to infant wrapping. Study results have identified knowledge and practice deficits related to the use of infant wrapping as a safe settling and sleep strategy to support safe sleeping messages in a sample of CHNs from nine health service districts. These deficits have been demonstrated to impact on the quality of information provided to parents. Study results have also identified a need for the development of evidence-based practice guidelines for CHNs to promote consistency in practice, parent advice and education that would help to further reduce the risk of SUDI. As a result of this study, the authors have since collaborated with SIDS and Kids National Scientific Advisory Group to develop national evidence-based guidelines for safe infant wrapping. There is a need for further investigation into the impact that an educational intervention based on evidence-based guidelines for safe infant wrapping would have on CHN knowledge and practice.

**IMPLICATIONS FOR PRACTICE**

- Child health nurses are an important information source for parents
- Prone position is a risk factor for SUDI
• Wrapping strategies based on principles of safe infant wrapping can assist parents to settle their babies in the recommended supine infant sleep position

• This study provides benchmarking data of CHNs’ knowledge, attitudes and practices relating to infant wrapping as an infant settling strategy and risk reduction strategy for SUDI

• Evidence based information and guidelines will promote consistent practice by CHNs

• Consistent, evidence-based information use by parents in caring for their baby will reduce the risk of SUDI
Table 1: Definition of Terms

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<th>Definition of terms</th>
<th>Definition</th>
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<td>Sudden and Unexpected Death in Infancy (SUDI)</td>
<td>SUDI is the sudden, unexpected death of an infant usually occurring during sleep, in which the cause is not immediately obvious. SUDI includes Sudden Infant Death Syndrome (SIDS) and fatal sleeping accidents(^10).</td>
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<tr>
<td>Sudden Infant Death Syndrome (SIDS)</td>
<td>Sudden Infant Death Syndrome (SIDS) is defined as the sudden and unexpected death of an infant under one year of age, with onset of the lethal episode apparently occurring during sleep, that remains unexplained after a thorough investigation including performance of a complete autopsy and review of the circumstances of death and the clinical history(^6,9,10).</td>
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<tr>
<td>Fatal Sleeping Accident</td>
<td>A death occurring during infant sleep, resulting from an accident, fall, suffocation, or mechanical asphyxiation. Fatal sleeping accidents are explained deaths that meet SUDI Criteria(^10).</td>
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Table 2: Summary of safe infant wrapping principles available to clinicians at time of study *

SIDS & KIDS Australia endorses the practice of wrapping infants to promote sleeping in the supine position.40

If parents choose to wrap their baby for sleep:*

- wrap material should be muslin or light cotton
- wrap does not cover baby’s head to prevent overheating
- avoid overheating – do not overdress baby under the wrap
- ensure SIDS&KIDS Safe Sleeping guidelines are followed
  1. Put baby on the back to sleep, from birth
  2. Sleep baby with face uncovered
  3. Cigarette smoke is bad for babies.
  • start loosening the wrap with view to not using it at all when baby starts rolling over

If parent or baby not comfortable with wrapping, do not use this method for settling.

*Safe infant wrapping principles at time of study based on recommendations stated in *Wrapping Your Baby 0-4 months*40. This pamphlet was available in some states of Australia, and used in some of the health districts participating in this study.
Table 3: Sample Demographics

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<td>British</td>
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<tr>
<td>Full-time</td>
<td>73</td>
<td>45.3</td>
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<td>Part-time</td>
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<td>Casual</td>
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<tr>
<td><strong>Post registration experience</strong></td>
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<td>0-4 years</td>
<td>3</td>
<td>1.9</td>
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<tr>
<td>5-9 years</td>
<td>13</td>
<td>8.1</td>
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<td>10 or more</td>
<td>145</td>
<td>90</td>
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<td><strong>Involvement in Parent education</strong></td>
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<tr>
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<tr>
<td><strong>Length of time working with parents of young infants</strong></td>
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<tr>
<td>0-4 years</td>
<td>5</td>
<td>3.1</td>
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<tr>
<td>5-9 years</td>
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<td>17.4</td>
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<tr>
<td>10 or more</td>
<td>128</td>
<td>79.5</td>
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<td><strong>Practice areas</strong>*</td>
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<td>Child health clinic</td>
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<td>Home visiting</td>
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<td>Parent education groups</td>
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<td>Child health line</td>
<td>11</td>
<td>6.8</td>
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</tbody>
</table>
| Parent management or education / early feeding clinic/ management | 19 | All ≤ 5%
| **Highest level of education***      |        |       |
| Post registration certificate        | 57     | 35.4  |
| Diploma/ degree                      | 53     | 32.9  |
| Post grad certificate                | 52     | 32.3  |
| Post grad diploma                    | 30     | 18.6  |
| Masters                              | 7      | 4.3   |
| Enrolled nurse                       | 3      | 1.9   |
| **Speciality qualifications***       |        |       |
| Child Health                         | 151    | 93.8  |
| Midwifery                            | 132    | 82    |
| Lactation consultant                 | 37     | 23    |
| Paediatric                           | 20     | 12.4  |
| Mental health/ neonatal/ Immunisation/ Health promotion/ community health/ continence/ management/ family planning | 32 | All ≤ 5%

* Multiple responses possible
Figure 1: Situations where participants identified wrapping was useful in practice.
Figure 2: Knowledge: Number of participants who identified correctly the SIDS & Kids guideline statements.
Figure 3: Wrapping advice for parents of infants at 2 months & 4 months

Would you recommend wrapping in supine as an alternative to prone?

- 2 month infant
- 4 month infant

% of participants

- Yes
- No
- Unsure
Reference List


dangers-experts-at-royal-childrens-hospital-warn-after-hip-injury-trend/story-fn7x8me2-1226305355827


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43. Imle M, Atwood J. Retaining qualitative validity while gaining quantitative reliability and validity: Development of the transition to parenthood concerns scale. Advances in Nursing Practice 1988;11:61-75.


