Review of internet images of sleeping babies for adherence to New Zealand safe sleep recommendations

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Introduction

In New Zealand the rate of SUDI (sudden unexpected death in infancy) has fallen from approximately 250 deaths per year in 1988 to 50 in 2008[1]. This is largely due to the uptake of education promoting a change in how babies are positioned for sleep; from 'not on the tummy or side' to 'on the back'. Despite the reducing deaths and awareness campaigns, SUDI is still the leading cause of preventable death in the first year of life. We know from research that if all babies sleep on the back, maintain a clear face, and are smokefree, then SUDI would become an extremely rare event. While health industries are aligned with these safe sleep principles, it is important to ensure that parents are receiving a consistent message of importance from all sources. The aim of this review was to evaluate internet images of sleeping babies to establish if websites, and New Zealand websites in particular, are modelling safe infant sleep to their viewers.

Method

Images of babies were obtained using the 'Google Images' search browser. The search term 'NZ baby sleep' was entered in the search engine on August 17 2010. The first twenty pages of results (400 images) were included in the study. Criteria for inclusion were that images were of younger babies who were also asleep. Images were excluded of babies who looked older than one year, where it was uncertain if the baby was asleep, and of babies asleep, but being held or in a car seat. Duplicate images were only counted once.

Images were reviewed for adherence to the Ministry of Health (MOH) safe sleep recommendations published in March 2010[2,3]. These are that in every place and at every sleep, ensure babies are 'face-up, face clear and smokefree'.

The analysis of images had three parts: firstly, each image was analysed for actual evidence of the baby being face-up, face clear and smokefree, secondly for evidence of potential hazards in the sleep environment which could lead to a covered face, or change in position, and thirdly, for evidence of products sold for use in a baby's sleeping environment. Specifically, the 'potential hazard' analysis looked at; (1) head covering, (2) loose bedding, (3) toys, (4) pillows, (5) soft sleep surface, and the 'products' analysis for (1) sleeping bags, (2) positioning aids and (3) swaddling/wrapping items.

An image met criteria for modelling Ministry of Health safety recommendations where the baby was in an extended supine (back) position, the baby's face and head were not covered or obstructed, the image was free of any potential hazards that could lead to a covered face or head, and the

[1] Child and Youth Mortality review committee: Fifth report to the Ministry of Health 2002-2008,
[2] http://www.moh.govt.nz/moh.nsf/indexmh/Publications-2010-Safe+sleep+essentials

[3] Safe sleep essentials leaflet. Change for our Children 2009. Code HE1228

environment was smokefree. Where it was unclear from the image as to how it should be classified, the ambiguity was noted as 'unclear' in the results.

Three reviewers independently analysed the images and inter-rater reliability was calculated for rating compliance with recommendations. The final decision for each image was made by the primary author. The number of images that were consistent with Ministry of Health recommendations was calculated as a proportion of the total images that met inclusion criteria for the study.

Websites for the included images were also reviewed to assess alignment with Ministry of Health recommendations. Websites were defined as 'New Zealand' if they had the domain .co.nz, 'international' if they had .com, .au, .net or other non .nz domains. Websites were also categorised as 'non-blog' (i.e. commercial or information) and 'blog' sites.

Results

Websites

Of the initial 400 images reviewed, 76 images of sleeping babies were identified on 59 unique websites. There was a range of 1-5 images per website with 50 websites displaying one image and 9 websites displaying between 2 and 5 images. Thirty five websites had New Zealand domain names (.co.nz), and 24 were international. Twelve websites (20%) were blogs and 47 (80%) were non-blog sites. Further analysis of New Zealand websites revealed that 5 (14%) were blog and 30 (86%) were non-blog sites.

Images

Of the 76 images of sleeping babies, 11 were of babies being held and one of a baby in a car seat. No further analysis was made of these 12 images. Of the remaining 64 images, twelve (19%) were on blog sites and 52 (81%) on non-blog sites. **Twenty six (40%) portrayed images consistent with the MOH recommendations**; four on blogs, and 22 on non-blog sites. Of the 26 that met the MOH recommendations, 21 (80%) were on New Zealand domain sites and 5 (19%) on international domains. Inter-rater agreement was 97% between the primary two authors and 93% when a third reviewer was introduced. Upon discussion common agreement was found on all images.

Position

Forty-two of the 64 images analysed were of babies lying in the recommended position (on the back) and 19 (30%) in non-recommended positions; 10 (16%) on their side, 8 (13%) on their front, and 1 (2%) in a chin-to-chest position. In three images, it was unclear what position the baby was in. Three (5%) of the 19 images of babies in unsafe sleep positions were on blog sites and thirteen (68%) were on New Zealand domains.

Table1. Relationship between recommended and not recommended sleep positions and type of website and domain (n=64)

	Sleep position of baby in image					
	Recommended n=42		Not recommended n=19		Unclear n=3	
Website genre	n	**%**	n	**%**	n	**%**
Non-blog	35	**83**	17	**89**	2	**67**
Blog	7	**17**	2	**11**	1	**33**
Domain type						
Overseas domain	13	**31**	6	**32**	1	**33**
NZ domain	29	**69**	13	**68**	2	**67**

Face Clear

Fifty nine (92%) of the 64 images showed an 'actual' clear face. Analysis of images for 'potential' hazards that could lead to a covered face identified just 27 (42%) with no 'actual' nor 'potential' hazards. A total of 43 potential hazards were identified in the 64 images (refer table 2). Excluding non-recommended positions as potential hazards, 37 of the 64 (58%) images had one or more potential hazard; 31 (48%) had a single potential hazard and 6 (9%) had two. No image had more than 2 potential hazards. Of the 31 images with a single potential hazard 13(42%) were photographed in a non recommended sleep position; the remaining images were in either a recommended position (5) or it was unclear (1).

The two most common potential hazards were 'head covering' and 'soft surfaces' identified 14 and 11 times respectively. In all but one image the potentially hazardous head covering was a hat. In 11 instances (84%), the hat was being advertised as a product for sale.

Table 2. Breakdown of the 'actual' and 'potential' hazards identified

Type of hazard identified	**'Actual' face not clear** n= 5	**'Potential' face not clear** n=43
Head covering		14 (**33%**)
Loose bedding	3 (**60%**)	7 (**16%**)
Toys in cot	2 (**40%**)	3 (**7%**)
Hazard unclear		4 (**9%**)
Pillow		4 (**9%**)
Soft surface	1 (**20%**)	11 (**26%**)

The 37 images with one or more potential hazard identified were displayed on 31 unique websites. Of these, 25 (81%) were non-blog websites and two (6%) were blogs. New Zealand domain names were used in 15 (60%) of the non-blog sites, and international domain names were used in the remaining 10 (40%) non-blog sites.

Products

Twenty five images were identified showing products associated with sleep in the baby's sleeping space. There were babies using swaddling or wraps in 14 (56%) of these images, baby sleeping bags in 8 images (32%), and positioning aids in 3 (12%); being a SafeTSleep^{TM} in 2 images (8%) and a sleep wedge in 1 (4%). Twenty two of the 25 images (88%) were displayed on non-blog websites. Of these, 5 (23%) were in a non-recommended position, and 11 (50%) showed potential hazards in the image: 9 (41%) head covering, 1 (5%) toys, and 1 (5%) a soft surface.

Smokefree

There was no evidence in any of the images of smoking.

Discussion

Limitations

A limitation of this study was the size and quality of the images being reviewed on the internet. Due to the angle at which a photo was taken, it was sometimes difficult to tell if a baby had been placed in a side position for the photo or if the baby had been placed on its back and just the face turned to the side. It was also difficult to identify items on the edge of the image that may or may not have been potentially hazardous. In some instances, the photo was a headshot. In these images it was impossible to tell what position the infant was in or if there were any potential hazards in its environment. This challenged the reliability of the inter-rater observation and the criteria for inclusion/exclusion was narrowed accordingly.

Another limitation of the study was the inability to assess how an image might influence a parent's decision to follow the safe sleep recommendations for their own baby. This is an area of research that could be addressed in a subsequent study.

Photography as art

It was encouraging that the majority of images that met MOH recommendations were on NZ domain sites. However the 60% of images that did not, could be seen as evidence that society has not yet embraced the importance of safety for babies when they sleep. Of particular concern was the number of non-blog websites using images portraying unsafe sleeping conditions, either an unsafe position of the baby, or, with potential hazards evident in the image. These images are not snapshots taken by family members for blogs, but images specifically chosen to represent a product or message.

Creators of internet sites may argue that the images are artistic rather than educational. However, when art is inconsistent with evidence-based public health messages it weakens the importance of these and creates confusion for viewers. This confusion may lead parents to believe risky behaviour is safe and place their baby at increased risk of an avoidable sudden death. Parents are best supported when there is consistency from all sources in visual material regarding safety for babies as they sleep. Websites predominantly aimed at pregnant women and parents of babies have a responsibility to ensure their imagery and text align with evidence-based recommendations**.**

Hats and wraps

The reason for the high number of images not meeting the safe sleep recommendations was due in part to the large number of babies with heads covered by a hat or as part of their wrapping. This is

not recommended in a baby's sleeping environment and is considered a potential risk for overheating, asphyxia and/or sudden infant death[4,5]. The International Society for the Study and Prevention of Perinatal and Infant Death (ISPID) recommendations state that hats in particular should be avoided when placing a baby to sleep indoors[6].

The prevalence of babies' heads and faces becoming covered during sleep has reduced in recent years and education campaigns such as the 'feet to foot' placement of babies in the bed and the promotion of sleeping bags instead of bedding is believed to have contributed. A large US study documented patterns of accidental asphyxia deaths for 2178 babies[7]. A covered face or head was one of the three main causes found.

Imagery of babies wearing hats, or with heads covered by wraps, intended as modelling of products for sale, needs to be of **awake babies** as the customer may be led to believe that a covered head while sleeping indoors is a safe practice for babies when the evidence is clear to the contrary.

Position

The prone (front) position is considered to be the most significant risk factor for sudden infant death,[8] so it is alarming that thirteen percent of images in this study were of babies in this most risky of positions. The number of babies on their sides (16%) was also concerning. The side is an unstable position for babies. Side sleepers change position most of all. While most roll to the back, those that roll to the front are at extra risk from inexperience in this position. This is called the '*unaccustomed prone*' risk and it affects babies usually placed on their side to sleep who roll to prone or are placed prone for the first time. Twenty percent of SIDS deaths in the NZ cot death study involved such babies[9].

Swaddling

Just over twenty percent of images were of infants who were swaddled. Swaddling is a common practice in the care of young babies in New Zealand. However, its safety depends on the total sleeping context: a baby's position, age and motor ability; the swaddling material and mode of wrapping; and whether or not a baby is used to being swaddled, or, if swaddling is introduced for the first time after a period of never having been swaddled.

Swaddling influences a baby's ability to arouse from sleep. This is a life–protecting response. Swaddling has been shown to weaken arousal for babies sleeping on their fronts, and strengthen it for babies sleeping on their backs[10]. It has also been shown that babies unaccustomed to being swaddled have reduced ability to arouse when new to swaddling.

[4] Ponsonby. et. Al Thermal environment and sudden infant death syndrome BMJ 1992;304:277-282
[5] Fleming et al Interaction between bedding and sleeping position in the sudden infant death syndrome: a population based case-control study BMJ 1990; 301:85-9
[6] http://www.ispid.org/prevention.html
[7] Drago et al.Infant Mechanical Suffocation Deaths in the United States 1980-1997 Pediatrics 1999 May 103 (5)
[8] 7Sullivan F.S Barlow S Review of risk factors for Sudden infant death syndrome Paediatric and Perinatal Epidemiology 2001 15, 144-200
[9] Cowan. S. Safe Start Education Change for our Children April 2009
[10] Thach BT. Does swaddling decrease or Increase the Risk for Sudden Infant Death Syndrome? J Pediatr 2009; 155:461-2

A baby's motor ability is also a safety factor in swaddling. In the first weeks, a swaddled baby may not be able to lift and turn their head to avoid an asphyxia challenge, or may tire quickly from the effort and become face-down. As motor ability develops and babies learn to roll and change position, a swaddled baby placed on the back may find themselves on their front, but become fixed there and unable to roll back. Of great concern is the instability of a swaddled baby who is then propped on pillows and may slump or roll off; or the swaddled baby placed in a cot or bassinette that is raised at the head end causing the baby to slip down the bed and get underneath the covers.

Swaddling imagery needs to be consistent with the importance of showing: a very young baby lying flat on the back, wrapped firmly but not tightly in a light swaddling material that does not cover the head. Such imagery would be consistent with health advice given to parents.

Recommendations

The initial stage of this review has highlighted several key points and we make the following recommendations to the editors of the New Zealand websites that were included in this study.

1. **Make strong policy**
   Align your website images of sleeping babies with the safety recommendations of the New Zealand Ministry of Health

2. **Develop clear checking systems**
   a. for checking that images of sleeping babies model the safe sleep principles of 'face-up, face clear, smokefree'.

   b. for checking that images of sleeping babies display a safe environment around the baby i.e. no potential hazards visible. Potential hazards include:
      - Unsafe positions: Propped, slouched, chin to chest, or lying on the side or front
      - Unsafe surfaces: Pillows, V-pillows, soft mattresses, bean bags, thin plastic
      - Unsafe places: Couches, chairs, make shift beds near walls
      - Unsafe bedding: loose covers, duvets, pillows, loosely fitting mattresses, toys
      - Unsafe head covering: hats, wrapping that covers the head, loose swaddling

3. **Include a statement of recommended practice** wherever sleep-related products are advertised for sale, in particular, products for swaddling, hats and positioning aids. (refer Appendix A and B for sample statements)

Summary

This study highlights the mismatch between health recommendations and website imagery regarding the safety of babies as they sleep. There is a need for raised awareness of what constitutes a safe sleeping environment for babies amongst editors of websites promoting or selling sleep related products for babies. The two main areas of concern relate to images of babies in a non-recommended sleep position, and images of babies with potential hazards visible in their sleep environment. These practices place a baby at a higher risk of sudden infant death.

To support consistency for families, we recommend that editors of websites selling or promoting infant sleep products implement policies and systems to ensure imagery of sleeping babies is

consistent with health advice for protecting babies as they sleep. In addition we recommend that websites add a safe sleep qualifier wherever infant sleep products are advertised, and a targeted statement about the safe use of hats, positioning aids and swaddling products.

This study is part of a wider project to remove signs and signals that weaken perceptions of importance in recommended safe sleep practices. By removing environmental signals that undermine what is promoted as best for babies, in the form of internet images, the context for supporting parents to act with safety is strengthened.

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Appendix A: Sample safe sleep qualifying statements

These statement could be added to packaging or included with products sold for use in a baby's sleeping environment, or displayed on baby product websites

Generic safety message for all products/web pages

Safety Guidelines

When using this product with babies under six months, make sure they always lie on the back, their face and head stay uncovered, and the air is smokefree.

'Face-up + face clear + smokefree' protects babies as they sleep.

Safety Guidelines for Positioning Aids

When using this product for babies under six months, make sure they always lie on the back, (not on the side, front or propped), their face and head stay uncovered, and the air is smokefree.

'Face-up + face clear + smokefree' protects babies as they sleep.

Sample safety message for: swaddling product

Safety Guidelines for Swaddling:

When using this swaddling wrap, ensure your baby is always sleeping flat on the back (not on the side, front or propped), their face and head stay uncovered, and the air is smokefree.

When your baby starts to roll, **stop** using this product for sleep times, or use only with **arms free** (not wrapped).

Sample safety message for: hat products

Safety Guidelines for Hats

Remove this hat when your baby is sleeping indoors. To be safe when they sleep, all babies, everywhere, must lie on the back, be smokefree, and keep their faces and heads uncovered.

Sample swing label for products intended for use in a baby's sleeping environment

INTERNATIONAL SAFE SLEEP STANDARDS FOR BABIES

The first six months are more vulnerable for babies.
To be safe when they sleep all babies, everywhere, need to be
'face-up + face clear + smokefree'

This product is to be used within these safety guidelines.

Authorised by Change for our Children, NZ
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Appendix B: International Safe Sleep Recommendations insert

INTERNATIONAL RECOMMENDATIONS FOR SAFE SLEEP FOR BABIES

The first six months are more vulnerable for babies, especially when they sleep.

Any product sold for use in a baby's sleeping environment must be used within these safety guidelines.

Safety Guidelines

To be safe when they sleep, for their first 1000 sleeps, all babies everywhere, must:

- ✓ **lie on the back**
- ✓ **+ maintain a clear face and head**
- ✓ **+ be smokefree, especially in pregnancy**
- ✓ **+ sleep in their own space/baby bed**
- ✓ **+ be near to a parent or carer at night**

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