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Safe Sleep for Infants in Hawaii— A Study of Parents' and Providers' Knowledge, Attitudes, and Behaviors

Healthy Mothers Healthy Babies Coalition of Hawaii

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1 Introduction

The Healthy Mothers, Healthy Babies Coalition of Hawaii (HMHB) is a local nonprofit organization dedicated to eliminating health disparities by improving Hawaii's maternal, child and family health though collaborative efforts in public education, advocacy and partner development. HMHB believes in equal access to quality health care; the importance of a collective voice to facilitate change; and the need for cultural competence and respect for diversity.

Services-wise, HMHB:

- Provides the MothersCare free phone line, which was designed to help pregnant women, new mothers and their families find the information and resources necessary to have a healthy pregnancy, birth, and baby.
- Offers quarterly trainings for perinatal support service (PSS) providers throughout Hawaii on various topics related to improving the health of pregnant women, new mothers, and their infants.
- Coordinates quarterly Perinatal Advocacy Network (PAN) meetings, the purpose of which are to increase awareness of perinatal issues in Hawaii, expand advocacy efforts for perinatal health issues and legislative actions, and increase networking and partnerships among state perinatal health providers.
- Creates and distributes various culturally appropriate educational materials for Hawaii's pregnant women, mothers, and their families. Topics include safe sleep/sudden infant death syndrome (SIDS) prevention, fetal alcohol spectrum disorder, postpartum depression, breastfeeding, and nutrition. A "healthy and hapai" educational pregnancy calendar is given to pregnant women to help them keep track of their prenatal appointments and find resources for a healthy pregnancy.
- Updates and maintains an online pregnancy and perinatal resource directory searchable by both type of service and location (providers add/edit their organization's information pending HMHB approval).
- Performs two maternal and child health-related needs assessments per fiscal year to help steer community organizations'- as well as the Hawaii State Department of Health's (DOH) efforts to improve maternal and child health in Hawaii.
- Updates families and providers on current recalls, maternal and child health news, and local resources/events in the maternal and child health community through social media, including Facebook and Twitter, and through promotion of the Text4Baby program.

2 Background

Sudden unexpected infant death (SUID) is defined as the sudden and unexpected death of an infant less than one year of age where the cause of death is not immediately obvious. If the incident of SUID cannot be explained after thorough investigation, it is usually attributed to SIDS.

More than 4,500 infants die of SUID every year in the United States, with approximately half attributed to SIDS. SIDS is the leading cause of death among infants between the age of

one month and one year and the third leading cause of infant mortality overall in the United States. In Hawaii, SIDS accounts for 41% of all post-neonatal deaths.

To reduce the risk of SIDS, the American Academy of Pediatrics (AAP) has made the following recommendations about infant sleep and sleep environments:

- Always place infants on their backs to sleep—both at night and for naps.
- Place infants to sleep on firm surfaces devoid of loose articles like pillows, blankets, sheets, crib bumpers, and toys.
- Ensure infants are not at risk for overheating by dressing them in light clothing and keeping the room at a comfortable temperature.[1]

In addition, the following are thought to be protective against SIDS:

- Elimination of exposure to secondhand smoke
- Use of a pacifier
- Breastfeeding

Although SIDS has declined both nationally and in Hawaii since these recommendations, sleep-related deaths from other causes including suffocation, entrapment, and asphyxia have increased. As a result, sleep-related deaths remain the number one cause of infant deaths after the first month of age.

Currently, many babies in higher-risk populations in Hawaii do not have safe sleeping environments. According to data from the 2009–2010 Pregnancy Risk Assessment Monitoring System (PRAMS) survey for Hawaii[2], there are a substantial number of risk factors for unsafe sleep environments:

- Sleep environment: Only 34.2% of babies in Hawaii usually sleep in an environment that meets all of the AAP's recommendations. Nearly two-thirds (65.8%) usually sleep in an environment with at least one of the following risk factors:
    - 19.6% sleep with pillows
    - 31.3% sleep with bumper pads
    - 19.6% sleep with plush blankets
    - 4.3% sleep with stuffed toys
    - 19.3% do not sleep in a crib or portable crib
    - 14.7% do not sleep on a firm or hard mattress
- Sleep position: Approximately one-quarter (24.3%) of babies in Hawaii are most often laid to sleep in high-risk sleep positions (either on their side or stomach).
- Bed sharing: One-third (33.9%) of Hawaii's infants always or often sleep in the same bed with another family or household member; an additional 19.9% of Hawaii's infants sometimes do.

[1] Centers for Disease Control and Prevention (2011). New infant safe sleep recommendations. Available from: http://www.cdc.gov/sids/Parents-Caregivers.htm.
[2] Hawaii Pregnancy Risk Assessment Monitoring System (2010). Hawaii Safe Sleep Quick Facts. Available from: http://health.hawaii.gov/mchb/files/2013/05/HawaiiSafeSleepQuickFacts_2013Update.pdf

HMHB works with DOH to gain a better understanding of these issues, share data and research findings on safe sleep, and address the issues via public health education. HMHB also attends bi-monthly Child Deaths Reviews—convened in part by DOH and attended by various nonprofit agencies, first responders, the medical examiner, and the prosecutor's office—to examine undetermined causes of infant deaths.

As a means of ameliorating SUID, HMHB created the program Hawaii Cribs for Kids—a course on safe sleep for low-income, high-risk pregnant women and their families. The course covers SIDS risk factors and how to create a safe sleep environment, as well as tracks the baby's health throughout its first year of life. Families that qualify receive a free crib at the end of the course.

3 Overview

Because conducting two semi-annual needs assessments are part of HMHB's funding mandate from DOH, and because HMHB has been working intensively with Safe Sleep Hawaii and the Keiki Injury Prevention Coalition to prevent crib death, DOH requested that HMHB assess the knowledge, beliefs, and behaviors of parents in Hawaii around infant sleep. In addition, perinatal providers were asked about their knowledge and awareness of infant safe sleep, as well as their patient/client education practices in that regard to determine how parents are receiving information.

DOH may use the data gathered in this assessment to inform its prevention strategies on SUID and SIDS in Hawaii.

4 Methods

This was a two-pronged survey. The first part was for parents, providers who are parents, and, for some questions, providers. It was a test of knowledge on the AAP's recommendations on safe sleep practices and also asked about parents' related beliefs and actual practices. The second part of the survey was for providers only. It asked about their safe sleep education practices and perceptions of barriers to educating their patients/clients in that regard.

Data was collected through an anonymous web-based survey using Survey Monkey. The survey link was sent electronically and via social media to parents and providers who support them—some of whom are also parents—in the PAN.

The questions were a mix of qualitative and quantitative. Survey Monkey's analysis feature was used to analyze the quantitative responses and qualitative responses were coded and quantified by the researchers.

4.1 Limitations

Due to funding and time limitations, parents and providers were asked questions in the same survey, even though the questions for each audience were meant to elicit a different type of information.

Additionally, a large portion of the survey questions allowed for multiple answers (i.e., "choose all that apply" and multiple choice plus "other" with a fill-in-the-blank option). Therefore, in some cases, respondents answered and then qualified their answers in the blank, or answered questions with more than one answer. Therefore, it is possible that in some cases, respondents were counted more than once; this is noted with "response totals" below, as appropriate.

5 Findings

A total of 122 people responded to this survey. Sixty percent of respondents *(n = 73)* are parents, some of whom are also providers; the remaining 40% are exclusively providers who provide parental support. Fifty-seven percent *(n = 69)* of respondents are providers, some of whom are also parents; the remaining 43% are exclusively parents.

None of the responses were mandatory and not all of the questions applied to all respondents; therefore, the number of respondents (or "n," as indicated below) for each question varies.

5.1 Parental Responses

The portion of the survey aimed at parents, provider/parents, and, in some cases, providers, was a test of knowledge—and to a certain degree, opinions—about the AAP's recommendations on safe sleep practices for infants. Most respondents were able to correctly identify which answers aligned with the AAP's recommendations.

The most controversial of the recommendations was about co-sleeping. This was unsurprising, given the aforementioned PRAMS data which found that one-third of parents co-sleep with their infants. As one respondent stated, "I realize the [AAP's] answer is 'never' but I disagree. I believe in the family bed."

5.1.1 Demographics

The ages of respondents' youngest children were as follows:

Age	Percentage
<1	23%
1–3	26%
4–5	10%
6–10	10%
11–20	15%
>20	16%

(n = 73)

That approximately half of parent participants do not have infants or children under 3 could potentially have some bearing on the responses, in that temporally, the farther away they are from parenting an infant or young child, the less current they are on AAP recommendations. This finding is important to consider, as many intergenerational caregivers in Hawaii may not have timely, relevant facts pertaining to safe sleep.

5.1.2 Sleep Position

Ninety-four percent of respondents knew that infants should be put to sleep on their backs. Two percent answered "stomach," 4% answered "side," and 2% answered that "it doesn't matter." *(n = 121)*

5.1.3 Sleep Environment

Only 3% of respondents agreed that it was important for infants to sleep on a soft surface at night or during naptime; 97% disagreed, which is the AAP's recommendation. *(n = 121)*

Eighteen percent of respondents felt it is safe to put an infant to sleep on an adult bed as long as a portable rail is used to prevent the infant from falling; 82% felt otherwise, which is the AAP's recommendation. *(n = 119)*

5.1.3.1 Co-sleeping

Although 89% of respondents knew that the AAP does not recommend that adults co-sleep with their infants *(n = 121)*, in practice, only 28% *(20 out of 71)* reported "always" following the recommendation.

Response	Percentage
Always put in a crib	28%
Usually put in a crib (5–6 nights/week)	10%
Sometimes put in a crib (3–4 nights/week)	14%
Rarely put in a crib (1–2 nights/week)	16%
Never—we co-sleep	32%

Again, most respondents knew the AAP's recommendation, but many expressed a differing opinion. Some felt that it was important to co-sleep at first to establish breastfeeding and/or to promote parent-child bonding. Others felt that co-sleeping made their lives easier and that they or their infants slept better. Still others reported choosing co-sleeping for health or safety reasons—one respondent indicated that after having her infant die from SIDS while sleeping alone in a crib, she since has chosen to co-sleep for SIDS prevention.

Specifically, those respondents who do not follow the AAP's recommendation about co-sleeping cited the following reasons: *(n = 60, response total = 101)*

Response	Frequency
Did not consider it a significant risk	19
I felt it was important to bond by co-sleeping	18
Too tired to put child to sleep separately	16
Did not know about the recommendation	10
Did not believe the information was relevant/factual	7
I waited until my child was older to co-sleep	7
Co-sleeping helped breastfeeding	6
Co-sleeping is better for health and safety	4
Not enough space in my home for a crib	4

Parent and/or child sleep better	3
Personal or cultural preference	3
Had infants before the recommendation	2
Could not afford a crib	2

In addition, 16% of respondents indicated that infant twins should sleep in the same crib to promote bonding; 84% disagreed, which is the AAP's recommendation. *(n = 121)*

5.1.3.2 Objects in Sleep Space

Nearly all of the parents who responded (98%) knew that infants should not sleep on a pillow or soft surface to prevent them from developing a flat head. One respondent answered "always," and one respondent answered "sometimes" infants should use pillows. *(n = 118)*

A few parents reported a lack of knowledge around blanket use. One participant indicated that, "My children always had their own sleep space but I didn't know I wasn't supposed to give them pillows or blankets." Another said, "My babies slept in a bassinet or crib, with a blanket."

Conversely, co-sleeping doesn't necessarily imply that parents disregard the AAP's recommendations completely. One participant responded that, "We co-sleep with no blankets or pillows."

5.1.3.3 Ambient Temperature Conditions

Regarding the AAP's recommendation not to let infants get overheated during sleep, respondents selected from multiple options for keeping infants warm. Most respondents chose the AAP's recommendation of "additional layer of clothing." *(n = 121; response total = 155)*

Response	Frequency
Additional layer of clothing (including sleep sacks)	79
Hat/bonnet	26
Baby blankets	19
Heater near the baby's crib	1
All of the above	6
None of the above	24

5.1.2 Other AAP-recommended Practices

5.1.2.1 Pacifier

Respondents were almost equally divided in their knowledge of the AAP's recommendation around pacifier use as a means of SIDS prevention, with slightly more not knowing about it or being unsure. *(n = 121)*

5.1.2.2 Secondhand Smoke

Eighty-four percent of respondents indicated that their infants are "never" exposed to secondhand smoke, one of the key risk reducers for SIDS. Ten percent reported that their

infants are "rarely (less than once a month)" exposed to it, 3% are "occasionally (once a week or less)" exposed, and 3% are exposed on a daily basis. *(n = 69)*

5.1.2.3 Breastfeeding

AAP recommends exclusive breastfeeding up to six months, and continuing until one year old, or longer. Several independent studies have determined a link between duration of exclusive breastfeeding and a reduction in SIDS deaths. The majority of respondents breastfed their children the entirety of the first year or beyond; only 2 respondents reported that they did not breastfeed at all, one of which was an adoptive birth. *(n = 73)*

Response	Percentage
<1 month	8%
Up to 3 months	12%
Up to 6 months	11%
Up to 9 months	7%
The entire first year or beyond	44%
N/A—I'm still breastfeeding	15%
Did not breastfeed	3%

5.1.3 Receiving Education on Safe Sleep Practices

Only 36% of participants indicated that safe sleep practices or SIDS prevention were explained to them in detail by a health care provider. Slightly more (37%) responded that it was only "briefly" mentioned and 23% said that it was "never mentioned." The remaining respondents (4%) varied in their answers. *(n = 73)*

Of those who discussed safe sleep practices and/or SIDS prevention with their health care providers, 66% were confident in their providers' knowledge and ability to answer their questions on these topics, 23% were "somewhat" confident, and 10% did not feel confident. Eighteen percent responded that they did not have any questions for their providers, which could indicate a missed opportunity for education. *(n = 48)*

Specifically, respondents reported they learned about safe sleep practices or SIDS prevention from one or more of the following sources. *(n = 73; response total = 146)*

Response	Frequency
Pediatrician	29
Online/web/email resources	29
Child care books	28
Doctor/obstetrician	17
Care provider	10
Friend(s)	10
I am a health care provider	9
Nurse	3
Infant care class	3
Sibling(s)	3
Parent(s)	2

Health education materials	2
Spouse	1

Six people indicated that they never encountered information on safe sleep practices or SIDS prevention.

5.2 Provider Responses

5.2.1 Demographics

Providers ranged from health educators to case managers, with the marginal majority of respondents being pediatricians. The table below provides a breakdown of participants' roles, some of which overlapped. *(n = 67; response total = 72)*

Provider Type	Frequency
Pediatrician	23
Nurse, nurse practitioner, CNM, midwife	18
Non-pediatric doctor	5
Case manager	5
WIC employee	5
Social services provider (including home visitors, assessment workers)	5
Health educator (including childbirth, breastfeeding)	4
Social worker	3
Lactation consultant	2
Program manager or director	2

The amount of patients/clients these providers see in a month who are either pregnant or have a child under one year of age ranged from less than 10 to greater than 31. *(n = 68)*

Number of Clients/Patients Who Are Pregnant or Have an Infant (<1 Year)	Percentage
None	6%
1–10	31%
11–20	13%
21–30	13%
More than 31	37%

5.2.2 Educational Practices

Over half (66%) of providers reported addressing safe sleep as an educational practice with all- to most of their patients/clients. Nine percent indicated that they bring it up with half of their patients/clients, while 10% said they brought it up with fewer than a quarter of their patients/clients; 3% never discuss it. However, some respondents don't provide direct care and others don't do well-child visits exclusively, which likely accounts for most of the variation. Only 3% of respondents didn't feel qualified to answer questions about safe sleep. *(n = 68)*

Sixty-eight percent of providers make it a priority or take the opportunity whenever possible to bring up safe sleep practices. Sixteen percent discuss it only if it comes up and 13% only discuss it with certain patients or rarely discuss it. Three percent never discuss it.

Providers felt that patients/clients "usually" (39%) or "somewhat" (39%) knew about safe sleep practices. Only 13% felt their patients/clients "rarely" knew about them and no one felt that they knew nothing about them. One provider responded, "Many know nothing until after they deliver and expect all education on every aspect of childcare to come from the nurses and doctors at the hospital." Regarding the issue of co-sleeping, another provider said, "I think they hear not to sleep with the child, but [are] not told how to do it safely, [which would be] especially [relevant] for breastfeeding moms." *(n = 69)*

5.2.3 Barriers to Education

Some of the barriers to working with patients/clients around safe sleep practices included any number of the following issues. *(n = 58; response total = 73)*

Issue	Frequency
Lack of time/overload of patients	21
The topic is unrelated to the visit	21
Assumption that education comes from another provider	11
Not applicable to provider's job	8
Provider disagrees with the recommendations	4
Lack of provider knowledge	4
Cultural barriers	2
Patient/client can't afford a crib/doesn't want one	2

The most prevalent sleep-related safety issues providers noted among their patients/clients were as follows. *(n = 59; response total = 72)*

	Frequency
Co-sleeping in an adult bed with parents or siblings	24
Co-sleeping is a cultural norm	11
Insufficient education/misunderstanding of safe practices (e.g., sleeping on the stomach is better)	6
Keeping sleep environments clear of blankets, pillows, toys, etc.	5
Socioeconomic barriers (e.g., can't afford a crib, don't have room for a crib)	4
Not enough breastfeeding	2
N/A	20

6 Recommendations

6.1 Education on Safe Co-sleeping

Although divergent from the AAP's recommendations, given the prevalence of co-sleeping and the adamant support for it by some parents, it might be prudent to explore the creation of an educational campaign for parents on how to co-sleep safely, as a harm-reduction

strategy. For example, one provider raised the issue of breastfeeding mothers who are told co-sleeping is unsafe so "they fall asleep on chairs or couches instead, which we know is more dangerous," in that infants can fall and sustain injuries or be exposed to SIDS risk factors like pillows. Several others pointed out that breastfeeding is correlated with SIDS risk reduction, and prioritized it over sleep positioning or bed sharing. And, as one provider put it, "You can't fight those mamas [who choose to co-sleep].

Therefore, instead of messaging exclusively around separate sleeping spaces, it could be helpful to teach providers to teach parents how to co-sleep safely. One provider suggested, "Teaching safe co-sleeping habits and acknowledging the benefits of co-sleeping/sleep sharing would perhaps be more beneficial than the current messages [i.e., never share a sleep space]. Dr. [William] Sears has compiled quite a bit of pro-co-sleeping research and made it available on this site: http://www.askdrsears.com/news/latest-news/dr-sears-addresses-recent-co-sleeping-concerns."

Although useful, it should be noted that much of the research Dr. Sears cites is a decade or more old. A cursory search of more recent pro-co-sleeping literature yielded the following articles, which may be useful for further research.

- Blanchard DS, Vermilya HL. Bedsharing: toward a more holistic approach in research and practice. Holist Nurs Pract. 2007 Jan-Feb;21(1):19-25.
- McKenna JJ, McDade T. Why babies should never sleep alone: a review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding. Paediatr Respir Rev. 2005 Jun;6(2):134-52.
- McKenna JJ, Ball HL, Gettler LT. Mother-infant cosleeping, breastfeeding and sudden infant death syndrome: what biological anthropology has discovered about normal infant sleep and pediatric sleep medicine. Am J Phys Anthropol. 2007;Suppl 45:133-61.
- Lahr MB, Rosenberg KD, Lapidus JA. Bedsharing and maternal smoking in a population-based survey of new mothers. Pediatrics. 2005 Oct;116(4):e530-42.

Additionally, infant co-sleeping deaths in Hawaii could be examined more closely to determine associated contributing factors. Studying their pervasiveness may give a clearer picture as to which factors detract from or contribute to a safer sleep environment for those who bed-share. Then, additional, Hawaii-specific recommendations can be included in any educational messaging around safe co-sleeping practices.

6.2 Modification of Hawaii Cribs for Kids Program

One provider felt that a lack of funds to buy a crib was a huge barrier to providing separate sleep spaces for infants. She lauds HMHB's Cribs for Kids program and offers suggestions on ways to increase its effectiveness: "More needs to be done prenatally to prepare the family, giving them time to buy a crib, borrow a crib or apply for the Cribs for Kids program. The Cribs for Kids program is great but it's too involved for these immigrant families. They will often be overwhelmed by the form to fill out, they won't have transportation to the training class, will be intimidated to go to the training class or lose interest by the time the training class is [over]. The training classes are so few and far between that it's a long wait and you lose your window of opportunity. If and when they finally get the crib, it's been months and the infant has been co-sleeping for all that time. I know resources are tight and

the program is much appreciated. However, if more could be done to have the patient apply, then have the program call the family [and] do an intake/training in the home, the success rate would be much higher. Another option is to find out where people can donate old cribs so we can send our low-income families to one place to get a used one. We'd also appreciate suggestions on alternatives to a crib for our low-income families who will not complete the rigorous process for Cribs for Kids. For example, can they use dresser drawers, pulled out of the dresser, as a place to have their infant sleep?"

This suggestion is currently part of the crib safety information promoted through the DOH and ParentLine, and may be something to consider promoting more via outreach materials.

7 Conclusion

The findings from this assessment do not differ substantially from the 2009–10 Hawaii PRAMS data. There are still many risk factors related to infant sleep—such as objects in the sleep area—and awareness about mitigation strategies—such as pacifier use and sustained breastfeeding—is not optimal. However, the most common divergence from the AAP's recommendations is the choice to co-sleep.

The decision is deliberate, whether for cultural reasons, for ease while breastfeeding, to get more restful sleep, or to enhance parent-child bonding. Furthermore, many respondents indicated that they did not consider the AAP's recommendation relevant or factual, nor did they consider it a significant risk. In other words, despite education and awareness, parents are intentionally disregarding the guidelines.

Moreover, parents are not necessarily receiving information from their pediatricians or from reputable sources familiar with current AAP guidelines. Both parents and practitioners felt that this issue is controversial and that guidelines should be balanced between co-sleep and crib-sleep.

Given the prevalence of co-sleeping in Hawaii and in light of the hard line many parents are drawing against changing their behaviors around bed sharing, it is recommended that safe practices for co-sleeping be studied, created, and shared with providers and parents. Enhanced research and the development of more targeted guidelines may provide a better balance toward educating parents on how to sleep safely, which is our ultimate goal.

HMHB will also be taking a look at increasing the outreach for Cribs for Kids, particularly as we have now additional funding sources available. The limited availability of cribs has created a barrier to serving all populations, but the feedback from respondents will be carefully considered for implementation.

8 Appendix

Survey questions and responses attached.