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Safe sleep community baby showers to reduce infant mortality risk factors for women who speak Spanish

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ABSTRACT

Objectives: In the United States, sleep-related deaths are one of the primary causes of death for infants age 28 days to one year. The American Academy of Pediatrics (AAP) developed Safe Sleep Recommendations which provide risk reduction strategies for sleep-related infant deaths. Interventions such as Safe Sleep Community Baby Showers have increased knowledge and intentions to engage in these safe sleep behaviors for women who speak English. This study assessed the feasibility, acceptability and initial outcomes of Safe Sleep Community Baby Showers for women who speak Spanish.
Methods: Six Spanish Safe Sleep Community Baby Showers were held in Sedgwick County, Kansas. One hundred forty-six pregnant or recently delivered women who spoke Spanish completed pre- and post-assessments. Univariate comparisons were made using McNemar's test for paired dichotomous variables.
Results: Participants had a high school diploma/General Educational Diploma (GED) or less (75.3%), and were uninsured (52.1%) or had Medicaid (n = 49; 33.6%). The majority reported being very satisfied (n = 130; 89.0%) or satisfied (n = 8; 5.5%). Compared to baseline, significant increases in intentions and confidence to follow the AAP Safe Sleep Recommendations were observed following the events. The majority of participants reported intending to place their infant on the back to sleep (98.6%), use only a safe surface (crib, portable crib, bassinet; 99.3%), and only include safe items (firm mattress, fitted sheet; 93.5%) (all $p < .001$).
Conclusions: Study findings support both feasibility and acceptability of modifying Safe Sleep Community Baby Showers to provide culturally and linguistically appropriate education for women who speak Spanish. Initial outcomes suggest increased intentions to follow safe sleep recommendations.

Introduction

Sleep-related deaths remain a primary cause of death for infants age 28 days to one year in the United States.[1] Though many successful interventions exist to address these deaths,[2] 3600 US infants continue to die each year.[3] Expert consensus determined future sudden unexpected infant deaths (SUID) research should center around better understanding priority populations and effective communication of risk.[4] Historically, non-Hispanic Black families have often been the focus of interventions, as they experience SUID at a rate of 172 deaths per 100,000 live births, compared with 85 for non-Hispanic Whites. Hispanic families are rarely prioritized with the lowest SUID rate at 49 deaths.[5]

In Kansas, SUID rates are higher for Hispanic infants (124 per 100,000 live births) than non-Hispanic White infants (89 per 100,000), though not as high as non-Hispanic Black rates (245 per 100,000). SUID remains the third leading cause of Hispanic infant mortality, following congenital anomalies and disorders related to short gestation and low birth weight.[6] As such, interventions prioritizing Hispanic families are needed.

Limited literature exists regarding infant mortality in the Spanish-speaking US population or interventions to address it. SUID rates for Hispanics are highest for Puerto Rican, Mexican, and Central/South American infants.[7] In addition, it is recognized that lack of English proficiency can affect access to health services,[8,9] including perinatal services. Further, both socioeconomic disparities[10,11] and acculturation[12] have been shown to affect risk factors for sleep-related deaths, such as preterm birth,[13] for women who speak Spanish.

Culturally appropriate education can facilitate positive practices for self and infant care (Aguila Gonzalez, et al. unpublished data, 2021). Yet there is a dearth of information regarding the impact of cultural differences within the Hispanic community on infant health outcomes.[14] Using culture and tradition to promote infant sleep

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practices has been recognized as a potential strategy for behavior change.[15] Initiatives such as reading children's books with safe sleep content, reintroducing traditional sleep locations (eg, wahakura, a Maori sleep device), elders promoting health information through traditional tribal activities (eg, craft-making) and using traditional celebrations (eg, baby showers) to promote behaviors have been implemented, with varying levels of evaluation and impact.[15]

Safe Sleep Community Baby Showers were developed as a grassroots effort in 2011 to reduce sleep-related infant deaths in Sedgwick County, Kansas.[16] These events traditionally focused on women who are English-speaking, non-Hispanic Black and have low socioeconomic status.[16,17] Due to the success of the Safe Sleep Community Baby Showers at increasing knowledge and intentions of women who speak English,[16-18] the Kansas Infant Death and SIDS (KIDS) Network worked with leaders from the Hispanic community to modify the events to provide education, tools and materials to women who speak Spanish.

Intervention

Safe Sleep Community Baby Showers use the culture and tradition of celebratory group events[15] to connect pregnant or recently delivered women with perinatal community resources, build social support networks[19] and learn about the American Academy of Pediatrics (AAP) Safe Sleep Recommendations such as placing infants alone, on their back, in a clutter-free crib to reduce sleep-related death.[20]

These events are based on the Health Belief Model (HBM) theory.[21,22] HBM identifies 6 areas of concern that must be addressed for behavior change: (1) severity, (2) susceptibility, (3) benefits, (4) barriers, (5) cues to action, and (6) self-efficacy. These constructs were applied to address sleep-related infant mortality (eg, conveying the message that all infants are at risk), infant safe sleep (eg, conveying the message that back position reduces risk of SIDS) and specifically to address these concepts during Safe Sleep Community Baby Showers (table available in Ahlers-Schmidt, 2020).[23] Previous Safe Sleep Community Baby Showers were first held in Sedgwick County[16,18,23] and then expanded across Kansas.[17] These events have served over 2000 women who primarily reported being non-Hispanic White, non-Hispanic Black and Hispanic; not married; having a high school education or less; and having Medicaid or no insurance.

Safe sleep education at these events is provided through a crib demonstration by certified KIDS Network Safe Sleep Instructors or members of the Wichita Black Nurses association (in Sedgwick County).[24] During the demonstration, a portable crib is set up with a doll in a onesie or sleeper and a wearable blanket, on its back, with only a pacifier. Unsafe items are set next to the crib (eg, blanket, hat, pillow) and discussion occurs with a small group of participants regarding the safe sleep environment and why other items are considered unsafe (eg, introduce risk of suffocation). The recommendation for room sharing is also discussed focusing on a separate crib, bassinet or portable crib in the parents' room as the safest place for an infant to sleep as it reduces the risk of SIDS by 50%.[20] Participants are prompted to identify barriers to or concerns regarding their ability to follow any of the AAP Safe Sleep Recommendations, which are then addressed by the instructor. For example, if participants express they have no room for a crib in their bedroom, the instructor can share ideas for moving furniture or using a smaller approved sleep surface (eg, bassinet). Additional education (eg, breastfeeding, tobacco cessation) and connection with local resources may occur through video, presentations, vendor booths, or one-on-one conversations depending on the group size and location. Events are most often held at a community-based location, such as a church or nonprofit organization.

The purpose of this study was to assess the feasibility and acceptability of conducting Spanish language Safe Sleep Community Baby Showers. We also assessed initial outcomes based on the changes in intentions of women who speak Spanish to follow the AAP Safe Sleep Recommendations for infant sleep following exposure to the curriculum.

Methods

Spanish language Safe Sleep Community Baby Showers were held twice a year between March 2017 and March 2019 in Sedgwick County, Kansas. March events were promoted through Spanish fliers distributed to clinics serving women of low socioeconomic status (eg, faculty/resident clinics, federally qualified health centers), maternal and child health programs (eg, prenatal education programs, home visitation programs, the Women, Infant and Children [WIC] program), Hispanic churches, and Hispanic market stores. In October, events were promoted in tandem with Café con Leche, an annual community health fair for Hispanic families. Women were encouraged to bring a support person, such as a spouse, parent, or friend, to attend with them.

Participants for this study were limited to a convenience sample of pregnant or recently delivered women (infant less than 1 year of age) whose primary language was Spanish, as English-language Community Baby Showers utilize a different format. Due to a larger number of attendees, the Sedgwick County English-language events used staggered start times and tour guides with small participant groups to ensure engagement with education and services; safe sleep videos and slide presentations were not used. Additional details on English-language events are reported elsewhere.[23]

This project was reviewed by the University of Kansas School of Medicine-Wichita Human Subjects Committee and determined not human subjects research as it used secondary analysis of data collected for program evaluation purposes.

Instruments

Authors developed pre- and post-assessment tools to address variables related to feasibility, acceptability, and primary outcomes of interest (intention to follow safe sleep recommendations). Feasibility was assessed based on recruitment of Spanish-speaking women with risk factors for infant mortality (eg, high school education or less, no or state insurance), engagement in the approximately 90-minute intervention/education and collection of pre- and post-assessment data. Demographic questions were included in the pre-assessment. Acceptability, as measured by participant satisfaction, was included on the post-assessment. Primary outcomes of interest were included on both the pre- and post-assessment. Safe sleep questions were based on previous tools (Table 1)[17,23-26] and a series of questions were developed with reference to the Health Belief Model Constructs (severity, susceptibility, benefits, barriers, cues to action, and self-efficacy).[21,22,23] Both tools were professionally translated into Spanish and reviewed by bilingual partners for accuracy.

Program staff reviewed both the pre- and post-assessments for completeness at the Safe Sleep Community Baby Showers and encouraged participants to answer them in their entirety. However, in keeping with the voluntary nature of participation, respondents had the right to skip questions. Most participants were able to complete each form in 10 minutes or less.

Procedures

Pregnant or recently delivered women completed the pre-assessment as they arrived. All education and materials were in Spanish, and included a safe sleep didactic session using a PowerPoint presentation (10 minutes), viewing a video on the ABCs of Safe Sleep (alone, back, clutter-free crib; available at KIDSKS.org; 10 minutes), breastfeeding education (5 minutes), tobacco cessation/avoidance education (5 minutes), group discussion (10 minutes) and a Safe Sleep Crib Demonstration (15

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Table 1
Questions regarding safe sleep intentions and/or behaviors.

Topic/question	Response options	Topic/question	Response options
Anticipated sleep position			
How will you lay your baby down to sleep? (check all that apply)	On the back On the tummy On the side Not sure	Cómo acostará a dormir a su bebé?	Boca arriba (de espalda) Boca abajo (de estómago) De lado No está segura
Anticipated sleep surface			
Where will your baby sleep at home? (check all that apply)	In a bassinet next to my bed In a portable crib next to my bed In a crib in my room In a crib in the baby's room In my bed On a twin or larger mattress or bed Couch/sofa/armchair Swing/car seat Don't know/not sure	Dónde dormirá su bebé en casa? (marque todas las que apliquen)	En un moisés al lado de mi cama En un corral portátil al lado de mi cama En una cuna en mi habitación En una cuna en la habitación del bebé En mi cama En una cama grande Sofá/sillón En un columpio/silla de auto No se/No estoy segura
Anticipated crib items			
Please check the items that are already in your baby's sleeping area at home, or that you plan to get for your baby's sleeping area.	Firm Mattress Fitted Sheet Wearable blanket/sleep sack Loose Blanket Cushions/pillows/nursing pillows Sleep Positioner Bumper Pad (mesh/non-mesh) Stuffed Toy Other	Por favor marque los artículos que ya se encuentran en el área de dormir de su bebé en casa, o que planea adquirir para colocar en el área de dormir de su bebé?	Colchón Firmen Sábana ajustada Saco/bolsa de dormir Manta suelta/Cobija Almohada Posicionador de dormir Protectores de Cuna Juguetes de Peluche Otro
Have or plan to discuss safe sleep with others			
Have you talked about Safe Sleep with others who may put your child down to sleep?	Yes No	Ha hablado acerca del Sueño Seguro con las personas que pondrán a dormir a su bebé?	Si No

minutes) facilitated by a Spanish-speaking KIDS Network board member or certified Safe Sleep Instructor.[17,24] Participants were encouraged to make sure all their infant sleep safety questions were answered. Following the Safe Sleep Crib Demonstration, participants had the opportunity to visit vendor booths to connect with local programs and resources (eg, breastfeeding, tobacco cessation, home visitation, prenatal classes; up to 30 minutes). All vendors had staff or event volunteers who spoke Spanish. Participants completed the post-assessment and then received a free safety-approved portable crib and wearable blanket, as well as infant safe sleep education handouts and materials (eg, door hangers) in Spanish. These items were intended to address the cues to action construct of the HBM and to ensure socioeconomically disadvantaged families could follow the safe sleep recommendations. Participants also had the opportunity to receive door prizes. Refreshments were served. On average, these events took 1 hour and 30 minutes. Cost per pregnant or recently delivered woman was approximately $100. Local foundation grants, KIDS Network fundraisers, and donations were used to cover these costs and varied per event.

Analysis

Data were collected, deidentified, and entered into a secure database by KIDS Network staff. Descriptive statistics were summarized using frequencies and percentages. Univariate comparisons between pre- and post-assessment responses were made to evaluate changes in intentions to follow the AAP Safe Sleep Recommendations for infant sleep using McNemar's test for paired dichotomous variables. All statistical tests were 2-tailed and used $\alpha = 0.05$. Statistical analyses were performed using SPSS for Windows, Version 23.0.

Results

Feasibility and demographics

Between March 2017 and March 2019, 6 Spanish-language Safe Sleep Community Baby Showers were held in Sedgwick County, Kansas. During this time 146 pregnant or recently delivered women who spoke Spanish completed the pre- and post-assessments and were included in analysis. No surveys had greater than 15% missing data, so all were included in analysis.

Most participants identified as Hispanic (n = 135; 92.5%), were married or partnered (n = 105; 71.9%) and had a high school diploma/General Educational Diploma (GED) or less (n = 110; 75.3%) (Table 2). At the time of the Safe Sleep Community Baby Showers, participants reported being uninsured (n = 76; 52.1%) or having Medicaid (n = 49; 33.6%) as their primary payer and received prenatal services from a hospital clinic (n = 66; 45.2%), county health department (n = 23; 15.8%), or private provider's office (n = 27; 18.5%). Few (n = 11; 7.5%) reported using tobacco in the previous six months; 4 of those (36.4%) reported currently using tobacco.

Acceptability

Overall, satisfaction with the events was high. The majority of participants reported being very satisfied (n = 130; 89.0%) or satisfied (n = 8; 5.5%) with a small portion reporting very dissatisfied (n = 2; 1.4%). No comments elucidated on the reason for dissatisfaction.

Primary outcomes of interest

Changes in health belief model constructs

On the pre- and post-assessment, participants were asked eight questions developed around the HBM constructs (Table 3). Participants demonstrated a positive change from pre- to post-assessment when responding to the following statements, *Sleeping with my baby can cause infant death* (84.1% vs. 96.4%; $p < .001$), *Putting my baby alone, on the back in a crib will help protect her* (84.4% vs. 97.2%; $p < .001$), *My baby will [not] choke on his back* (69.9% vs. 94.1%; $p < .001$), and *My baby is at risk of dying of SIDS* (66.9% vs. 77.7%; $p = .007$). However, no significant change was observed regarding loose blankets causing death, keeping infants warm without blankets, lacking room

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Table 2
Spanish safe sleep community baby shower participant characteristics (N = 146).

	n (%)
Race/ethnicity	
Hispanic	135 (92.5)
Non-Hispanic White	4 (2.7)
Non-Hispanic Black	3 (2.1)
Multiracial	2 (1.4)
Relationship status	
Married/partnered	105 (71.9)
Single	33 (22.6)
Other	4 (2.7)
Education	
Some high school	53 (36.3)
High School Graduate/General Educational Diploma	57 (39.0)
2-Year Community College Graduate	8 (5.5)
College Degree or Higher	9 (6.2)
Other	14 (9.6)
Insurance status	
Uninsured	76 (52.1)
Medicaid	49 (33.6)
Private	8 (5.5)
Other[a]	7 (4.8)
Prenatal care provider	
Hospital clinic	66 (45.2)
County health department	23 (15.8)
Private provider's office	27 (18.5)
Community health center	19 (13.0)
Other[b]	7 (4.8)
Used tobacco in the past 6 months	
Yes	11 (7.5)
No	130 (89.0)

Data presented as frequency (%). Missing data: Race/Ethnicity (n = 2); Relationship Status (n = 4); Education (n = 5); Insurance Status (n = 6); Prenatal Care Provider (n = 4); Tobacco Use (n = 5).

[a] Insurance Status - Other: Managed Care Organization, Military, other and individuals with more than one insurance.

[b] Prenatal Care Provider - Other: clinic at work/school, none, and individuals with more than one prenatal care provider.

for a crib in the parent's room, or being unclear on what to do when provided inconsistent sleep advice.

Three additional questions assessed the HBM construct of self-efficacy. Most participants reported feeling "more confident" after attending the Safe Sleep Community Baby Shower regarding their ability to get infant to sleep on the back (n = 136; n = 93.2%), to have infant sleep in the same room but in a separate bed (n = 128; 87.7%) and to keep loose blankets out of the crib (n = 116; 79.5%).

Changes in safe sleep intentions

Prior to the Safe Sleep Community Baby Showers, 111 (78.7%) participants reported they would place their infant only on the back to sleep (Table 4). When asked about anticipated/current sleep surfaces, most (n = 108; 75.0%) reported they would place their infant only in a safe surface (ie, crib, portable crib or bassinet). Of the 36 (n = 25.0%) who reported anticipated/current use of unsafe surfaces, a twin or larger mattress or bed (n = 18; 50.0%), swing/car seat (n = 2; 5.6%) and don't know/unsure (n = 19; 52.8%) were reported. When asked about items in or planned for the infant's sleeping area, 77 (55.4%) reported only safe items (ie, firm mattress, fitted sheet, or wearable blanket). Of those who indicated unsafe items (n = 62; 44.6%), participants most often reported loose blankets (n = 28; 45.2%), bumper pads (n = 27; 43.5%), cushions/pillows/nursing pillows (n = 12; 19.4%), sleep positioner (n = 8; 12.9%), stuffed toy (n = 4; 6.5%), and other (n = 11; 17.7%).

After the events, participants demonstrated a significant increase in intention to follow recommended safe sleep practices. Almost all reported they intended to place their infant on the back to sleep (n = 139; 98.6%; $p < .001$); the remaining 2 (1.4%) planned on side or multiple positions. All but one planned to use only a safe surface (n = 143; 99.3%; $p < .001$), with the one individual planning to use a twin or larger mattress or bed. Regarding objects in the sleep environment, 130 (93.5%) intended to include safe items only ($p < .001$). Of the remaining 9 (6.5%) participants, unsafe items included loose blankets (n = 5; 55.6%), bumper pads (n = 4; 44.4%) and sleep positioners (n = 2; 22.2%). Most participants (n = 124; 91.2%) planned to discuss safe sleep with other caregivers after attending the Safe Sleep Community Baby Showers ($p < .001$). At the end of the showers, participants could elect to receive a safety-approved portable crib. If they had not received this item, 20 (13.9%) participants would have had to have their infant sleep on an unsafe surface. The most common unsafe sleep surfaces reported were adult bed (n = 14; 70%), car seat (n = 2; 10%), sofa (n = 1; 5%), swing (n = 1; 5%) and other (n = 5; 25%).

Discussion

There is a dearth of literature on perinatal programs and outcomes for women whose primary language is Spanish. In Kansas, the Hispanic infant death rate is higher than the national rate,[27] and SUID is the third leading cause of Hispanic infant death (15.9%).[28] Since 2005, the Hispanic infant mortality rate increased from 1.4 times the non-Hispanic White rate to nearly 2 times the rate, while disparities between non-Hispanic Black and White rates have decreased.[29] There is a clear need to support healthy behaviors during pregnancy and provide culturally and linguistically appropriate education and tools for safe infant care practices to reduce these disparities.

This study is a first step in better understanding safe sleep knowledge and intentions of women whose primary language is Spanish, and the impact group prenatal education events have on planned infant sleep behaviors. Pregnant women and parents who primarily speak Spanish may struggle to understand pregnancy and childcare anticipatory guidance or instructions.[30,31] It is imperative that culturally and linguistically appropriate education options are made available. Such opportunities must ensure engagement of trusted cultural representatives to help participants feel safe in accessing the resources.

With regard to feasibility outcomes, recruitment of Spanish-speaking women at-risk for experiencing infant mortality was successful, as three-quarters of participants had a high school diploma or less and over 85% were on Medicaid or uninsured. Further, nearly 30% were not married/partnered. All participants completed both the pre- and post-assessments and received the full educational intervention. Nearly all participants (95%) were satisfied or very satisfied with the event they attended. These data provide proof of concept support for the practicability and acceptability of holding group educational events with Spanish-speaking women during the perinatal period.

Prior to the Safe Sleep Community Baby Showers, intention to follow best practices to reduce the risk of sleep-related death was low, with nearly half of attendees planning to have unsafe items in the sleep environment and a quarter planning on unsafe surfaces or positions. Following these events, the majority of participants planned to follow the AAP Safe Sleep Recommendations for position, surface, and environment.[32]

Despite significant changes in intention to create a blanket-free sleep environment, removal of blankets may be a challenge for some women who speak Spanish. Following the Safe Sleep Community Baby Shower, 15.6% of participants responded that they could not keep their infant warm without blankets, and though most participants felt more confident about keeping loose blankets out of the crib following the event, over 20% did not. Demonstrating the need for health education strategies designed specifically for Hispanic families, Nitsos et al[32] created culturally and linguistically appropriate education materials on tummy time.

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Table 3
Changes in beliefs regarding sleep risk and safe sleep practices (N = 146).

	Presurvey n (%)	Postsurvey n (%)	Total change *p*
My baby is at risk of dying of SIDS/Mi bebé está en riesgo de morir de SIDS (Muerte Súbita Infantil).			.007
True/Verdadero[a]	87 (66.9)	101 (77.7)	
False/Falso	43 (33.1)	29 (22.3)	
Loose blankets in the crib can cause infant death Cobijas/Mantas sueltas en la cuna pueden causar la muerte infantil.			.219
True/Verdadero [a]	134 (95.0)	138 (97.9)	
False/Falso	7 (5.0)	3 (2.1)	
Sleeping with my baby can cause infant death/Dormir con mi bebé puede causar la muerte infantil.			<.001
True/Verdadero [a]	116 (84.1)	133 (96.4)	
False/Falso	22 (15.9)	5 (3.6)	
Putting my baby alone, on the back in a crib will help protect her/Acostar a mi bebé solo(a), sobre su espalda en su cuna ayudará a proteger a mi bebé.			<.001
True/Verdadero [a]	119 (84.4)	137 (97.2)	
False/Falso	22 (15.6)	4 (2.8)	
My baby will choke on his back/Mi bebé se atragantará si se acuesta boca arriba (sobre su espalda).			<.001
True/Verdadero	41 (30.1)	8 (5.9)	
False/Falso [a]	95 (69.9)	128 (94.1)	
I can't keep my baby warm without blankets/No puedo mantener a mi bebé calientito(a) sin cobijas/mantas.			.151
True/Verdadero	30 (22.2)	21 (15.6)	
False/Falso [a]	105 (77.8)	114 (84.4)	
I don't have room for a crib in my room/No tengo espacio para una cuna en mi habitación.			.189
True/Verdadero	24 (17.3)	17 (12.2)	
False/Falso [a]	115 (82.7)	122 (87.8)	
People tell me different things about how my baby should sleep and I don't know what to do/Personas me dicen cosas diferentes acerca de cómo debo dormir a mi bebé y no sé qué hacer.			.361
True/Verdadero	40 (29.2)	34 (24.8)	
False/Falso [a]	97 (70.8)	103 (75.2)	

Data reported as frequency (%). Missing data: risk of dying of SIDS (n = 16); loose blankets (n = 5); sleeping with baby (n = 8); putting baby alone, on back, in crib (n = 5); will choke on his back (n = 10); can't keep warm without blankets (n = 11); don't have room for a crib (n = 7); people tell me different things and I don't know what to do (n = 9).
p value < .05 indicates statistically significant difference between pre- and postsurvey responses.
[a] Indicates desired response.

Table 4
Changes in intended safe sleep practices (N = 146).

	Presurvey n (%)	Postsurvey n (%)	Total change *p*
Anticipated sleep position[a]			<.001
Back only	111 (78.7)	139 (98.6)	
At least one unsafe position[b]	30 (21.3)	2 (1.4)	
Tummy only	2 (6.7)	1 (50.0)	
Side only	15 (50.0)	0 (0.0)	
Multiple positions	9 (30.0)	1 (50.0)	
Not sure	4 (13.3)	0 (0.0)	
Anticipated sleep surface[a]			<.001
Only safe surfaces (crib, portable crib, or bassinet only)	108 (75.0)	143 (99.3)	
At least one unsafe surface[a]	36 (25.0)	1 (0.7)	
My bed	18 (50.0)	0 (0.0)	
Twin mattress or larger	0 (0.0)	1 (100)	
Swing/car seat	2 (5.6)	0 (0.0)	
Don't know/unsure	19 (52.8)	0 (0.0)	
Anticipated crib items[a]			<.001
Only safe items (firm mattress, fitted sheet, or wearable blanket only)	77 (55.4)	130 (93.5)	
At least one unsafe item[b]	62 (44.6)	9 (6.5)	
Loose blanket	28 (45.2)	5 (55.6)	
Bumper pads	27 (43.5)	4 (44.4)	
Cushion/pillows/nursing pillows	12 (19.4)	0 (0.0)	
Stuffed Toy	4 (6.5)	0 (0.0)	
Sleep positioner	8 (12.9)	2 (22.2)	
Other	11 (17.7)	1 (11.1)	
Have or plan to discuss safe sleep with others			<.001
Yes	60 (44.1)	124 (91.2)	
No	76 (55.9)	12 (8.8)	

Data reported as frequency (%). Missing data: Anticipated sleep position (n = 5); Anticipated sleep surface (n = 2); Anticipated crib items (n = 7); Discuss with others (n = 10).
p value < .05 indicates statistically significant difference between pre- and postsurvey responses.
[a] Presurvey may represent actual sleep behaviors for women who had already delivered.
[b] Percentages of unsafe position, surface and crib items based on a denominator of only those indicating unsafe practices.

Tummy time is recommended by the AAP[20] and this education allowed caregivers who speak Spanish to engage in demonstrations while having their questions answered. Results of the activity were increased confidence in performing the tummy time activity.[32] Safe Sleep Crib Demonstrations at the Community Baby Showers showed layered clothing and an infant wearable blanket as an alternative to loose blankets, which may have resulted in the significant changes observed. Barriers may remain to implementing these strategies and should be explored in terms of socioeconomic, cultural, and historical drivers, as infant sleep practices vary widely among Hispanic mothers' birth countries.[33]

Other successful projects appear to have reduced sleep-related infant deaths by targeting specific risk factors in high-risk populations through interventions based on cultural traditions. For example, in New Zealand, the Maori, an indigenous group, experienced higher rates of sleep-related death than other groups, most likely due to high maternal smoking rates and high rates of bedsharing.[34-36] When messages to stop bedsharing were rejected, a targeted intervention was needed. Building on cultural tradition, midwives worked with mothers to weave flax structures called wahakuras. These bassinet-like baskets[33] provide a culturally and spiritually relevant way to promote risk reduction strategies (eg, smoke-free environment, back position).[36] Subsequent to the introduction of the intervention, infant mortality among the Maori fell by 29%.[37] Connecting blanket alternatives to Hispanic cultural traditions and history, such as through fabric designs, embroidery, or other means, may be an important strategy for increasing their use. It is important to note that both the current study and the work in New Zealand assessed item-level interventions and outcomes as mediators of broader infant mortality outcomes. Such item-based feedback can be used to identify specific barriers that may be culturally influenced and implement strategies that embrace culture and tradition in order to increase adherence to recommendations.

This study is not without limitations. Events were held in a single Midwestern community. In Sedgwick County, Kansas, 79% of Hispanics report Mexican origin[38] which may limit the generalizability of the findings to Hispanic women of other origins. Collected data are self-reported which could result in response bias. Data were only collected the day of the event and focused on intentions and confidence; actual behaviors regarding infant safe sleep could not be assessed and behaviors do not always follow intentions. A recent study using a nationally representative sample of mothers found that 43.7% exclusively used supine sleep, though 57.6% had intended to only use supine; sleep position was influenced by race, education, physician advice and components of the theory of planned behavior (eg, perceived control).[39] Similarly, a systematic review of breastfeeding studies using the theory of planned behavior, showed some positive relationship between intentions/confidence and actual behaviors, though moderating factors (eg, self-determination, relatedness, competence) impacted the relationship.[40] Future studies should utilize mixed methods design, including focus groups, to refine the intervention, especially around concepts where change was not observed. Follow-up measures, such as phone calls, surveys, or home visits should be used to assess actual behaviors. In addition, studies of intervention effectiveness that include a control or comparison condition are necessary to further identify the effectiveness of the program.

Despite these limitations, this study suggests Safe Sleep Community Baby Showers can be modified to provide culturally and linguistically appropriate education for pregnant and recently delivered women whose primary language is Spanish. It further emphasizes the feasibility of modifying an effective group education program to support underserved populations. However, even with the overall success of these events, barriers remain to following safe sleep practices and other perinatal health and infant care practices. A such, the events should continue to attempted to address access, linguistic, and cultural barriers by facilitating contact with culturally representative community programs working in related perinatal areas. Participant satisfaction with the events was high; other communities should consider such events to address key drivers of infant mortality within the Hispanic community.

Conclusion

This study extends the limited literature on perinatal programs and outcomes for women whose primarily language is Spanish. Results suggest Safe Sleep Community Baby Showers can provide culturally and linguistically appropriate education for pregnant and recently delivered women who speak Spanish. Results also demonstrate the feasibility of modifying a group education program to support underserved populations. Future studies should assess behavior change regarding infant sleep following such events to determine the impact on actual behavior and to identify areas for improvement.

Declaration of conflict of interest

The authors declare that they have no conflict of interest.

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