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Maternal Assessment of Physician Qualification to Give Advice on AAP-Recommended Infant Sleep Practices Related to SIDS

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Abstract

Objective—The American Academy of Pediatrics (AAP) strongly recommends the supine-only sleep position for infants and issued 2 more sudden infant death syndrome (SIDS) reduction recommendations: avoid bed sharing and use pacifiers during sleep. In this study, we investigated the following: 1) if mothers from at risk populations rate physicians as qualified to give advice about sleep practices and 2) if these ratings were associated with reports of recommended practice.

Methods—A cross-sectional survey of mothers (N = 2355) of infants aged <8 months was conducted at Women, Infants, and Children (WIC) Program centers in 6 cities from 2006 to 2008. The predictor measures were maternal rating of physician qualification to give advice about 3 recommended sleep practices and reported nature of physician advice. The dependent measures were maternal report of usage of recommended behavior: 1) “infant usually placed supine for sleep,” 2) “infant usually does not share a bed with an adult during sleep,” and 3) “infant usually uses a pacifier during sleep.”

Results—Physician qualification ratings varied by topic: sleep position (80%), bed sharing (69%), and pacifier use (60%). High ratings of physician qualification were associated with maternal reports of recommended behavior: supine sleep (adjusted odds ratio [AOR] 2.1, 95% confidence interval [CI], 1.6–2.6); usually no bed sharing (AOR 1.5, 95% CI, 1.2–1.9), and usually use a pacifier during sleep (AOR 1.2, 95% CI, 1.0–1.5).

Conclusions—High maternal ratings of physician qualification to give advice on 2 of the 3 recommended sleep practices targeted to reduce the risk of SIDS were significantly associated with maternal report of using these behaviors. Lower ratings of physician qualification to give advice about these sleep practices may undermine physician effectiveness in promoting the recommended behavior.

Keywords

Back to Sleep campaign; infant mortality disparities; sleep position; sudden infant death syndrome

Sudden infant death syndrome (SIDS) remains the leading cause of postneonatal death in the United States, resulting in 2116 deaths and accounting for 22% of postneonatal deaths in 2006.^{1,2} The link between prone sleep position and SIDS was sufficient for the American Academy of Pediatrics (AAP) to issue sleep position recommendations in 1992, and for the US Public Health Service to initiate a Back to Sleep campaign in 1994.³⁻⁵ The Back to Sleep campaign has contributed to reducing the rates of prone sleeping, along with a concomitant marked decline in SIDS rates. Between 1992 (2 years before the Back to Sleep campaign) and 1996 (2 years after its launch), the prevalence of prone sleeping decreased by 66% and the SIDS rate declined by 38%.⁶ Other studies corroborated these general trends.^{7,8} In the most recent statement on sleep position in 2005, the AAP more strongly recommended the supine position as the only safe choice and indicated that side sleeping is no longer an acceptable alternative. The AAP also issued 2 more recommendations to prevent SIDS: infants should be offered pacifiers when placed to sleep and parents should avoid bed sharing during sleep.⁹

Despite early declines in both prone sleep position and SIDS rates for the US population, a plateau has been reached in nonsupine sleep position at 24%.¹⁰ Although these declines are laudable, there are substantial disparities by race/ethnicity and other social factors in both the rates of nonsupine sleep position and the rate of SIDS. The rate of SIDS for black infants is more than twice that for white infants, and the rate of nonsupine sleep is approximately 20% higher for black infants.¹⁰ In addition, the infants of low income and less educated mothers are more likely to sleep in the prone position and are more likely to die from SIDS.¹¹⁻¹⁵

The reasons for the plateau and the persistent disparities in sleep position and SIDS rates are unclear because the Back to Sleep campaign was previously effective in changing infant sleep position. Current SIDS reduction efforts rely on physicians and other health care providers to educate families about SIDS risk reduction. Our prior work identified barriers to adoption of Back to Sleep recommendations, including type of advice received, sources of advice, and extent that advisors are trusted.¹⁶ These findings led to considering whether differential perceptions of physician's expertise to provide infant care advice may affect the impact of that advice.

Although prior studies have shown that physician advice is associated with maternal behavior,¹⁷ the plateau suggests that there are parents who are either not receiving the advice or not adopting the recommended practices despite receiving the advice. It is unclear if physicians remain the most effective source of information regarding recommended sleep practices. The purpose of our study was to determine the following: 1) if mothers from at risk populations regarded physicians as qualified to give advice about recommended sleep practices and 2) if maternal ratings of physician qualification were associated with reports of recommended sleep practices.

Methods

Study Population

We conducted in-person, semistructured interviews with mothers of infants aged less than 8 months enrolled at Women, Infants, and Children (WIC) Program centers. The WIC Supplemental Nutrition Program is a federally funded program for low-income women who are pregnant, breastfeeding, and/or postpartum and for low-income children aged under 5 years. Study participants were enrolled at 6 sites during the periods June to December 2006, June to September 2007, and July to November 2008. In 2006, 788 mothers were enrolled in WIC centers in Birmingham, Ala, Dallas, Tex, Detroit, Mich, and New Haven, Conn. In 2007, a total of 792 mothers were enrolled in 2 of these sites, Dallas and New Haven, and in

2 new sites, Clarksdale, Miss and Jackson, Miss. In 2008, 775 mothers were enrolled in these same 4 sites. Mothers were eligible to participate in the study if they received benefits from WIC, had an infant aged less than 8 months, and spoke English. We chose WIC centers serving at least 50% African American clients to include a larger percentage of this at-risk population in the study. Two sites were chosen in Mississippi to gain additional data on populations at particular risk for SIDS and with low rates of adherence to sleep practice recommendations, and to obtain baseline data before a federally funded SIDS risk reduction initiative was implemented in the area. A total of 2491 mothers met eligibility criteria and were approached for an interview. Of these, 2411 (97%) consented to participate. A total of 2355 completed the interview, yielding a response rate of 95%.

Interviews

Research assistants trained by the investigators (A.M. and E.R.C.) conducted all the interviews. Interviewers asked respondents to demonstrate what position they placed their infant in for sleep by using a doll. After the interview, all participants received current Back to Sleep campaign recommendations for safe infant sleep behaviors and a \$10 gift certificate. All participants gave informed consent.

The Yale University School of Medicine Human Investigation Committee and the Boston University Medical Campus Institutional Review Board approved the study. In addition, the institutional review boards for the appropriate agencies at each site (eg, county or state departments of public health) approved the study.

Definitions of Predictor and Dependent Variables

We identified 2 predictor variables of interest: 1) maternal ratings of physician qualification to give sleep behavior advice and 2) maternal report of the nature of physician sleep behavior advice received. For the first predictor variable, we collected data on maternal ratings of physician qualification to give advice on each of the 3 recommended sleep behaviors by using the following question stem: “Doctors give advice to parents about different topics. How qualified do you think your baby’s doctor is to give you advice on ...” Subsequent phrases included “what position your baby should sleep in,” “whether an adult should share a bed with your baby,” and “whether your baby should use a pacifier when sleeping.” We also asked mothers to rate physician qualification to give advice about 3 other infant care practices: “whether and when to give vaccinations,” “what to do when your baby has a fever,” and “what and how to feed your baby.” The variable for each topic had 2 categories based on responses to a 5-point Likert scale; a high rating of qualification was defined as a 4 or 5 and a low qualification rating defined as ≤ 3 .

For the second predictor variable, mothers were asked about the nature of doctor’s advice regarding “baby’s sleep position,” “sharing bed with baby during sleep,” and “pacifier use during sleep.” Maternal reports of physician advice were coded into 3 categories based on correspondence of the advice with the 2005 AAP recommendations: “concordant” (consistent with AAP recommendations), “discordant” (inconsistent with AAP recommendation) and “no advice” if none was given. In the case of sleep position, *concordant* means supine-only sleep was recommended. It excludes advice for nonprone sleep, which includes the side position that is no longer recommended.

In addition, we collected data on a previously identified factor associated with whether mothers follow sleep recommendations—who is the mother’s most trusted source of advice regarding infant sleep practices.¹⁶ The 4 categories for trusted source of advice were based on the most frequently reported responses in the prior study: “family,” “doctors,” “myself,” and “other.”

The primary dependent variables were based on maternal report of their usage of 3 recommended infant sleep behaviors: supine sleep, no bed sharing during sleep, and pacifier use during sleep. The dependent variables for these analyses were maternal report of the following: 1) “usually placed supine for sleep,” 2) “usually does not share a bed with an adult during sleep,” and 3) “usually use a pacifier during sleep.”

We also collected data on demographic characteristics: maternal age, race/ethnicity, educational level, parity, and infant age. Mothers self-reported their race/ethnicity as African American, Latina, white or other. Mothers who identified themselves as Latina were included in the Latino group regardless of race.

Statistical Analysis

Descriptive statistics including frequencies and percentages were calculated, followed by bivariate and multivariate logistic regression analyses. In bivariate analyses, we calculated unadjusted odds ratios for 3 main dependent measures: usually placed supine for sleep, usually does not share a bed with an adult during sleep, and usually use a pacifier during sleep, with 2 corresponding primary predictor variables for each dependent measure: 1) maternal rating of doctor’s qualification to give advice about that topic and 2) the nature of doctor’s advice regarding that topic. In multivariate logistic regression analyses for the 3 primary dependent measures, covariates were chosen based on bivariate analyses and on our previous research.^{9,15,17} The maternal rating of physician qualifications, nature of physician advice, and trusted source of advice achieved .05 level of significance in bivariate analyses. Demographic factors proven to be important in previous studies were included independent of their significance in bivariate analyses. The final models for each of the 3 recommended infant sleep behavior dependent measures included mother’s age, self-identified race/ethnicity and level of education, baby’s age, maternal rating of physician qualifications, nature of physician advice, and trusted source of advice for the corresponding behavior, study site, and study year.

We first analyzed data from the 3 years separately. The adjusted analyses yielded similar results, so the analyses presented combine data from all 3 periods. All analyses were conducted with SAS 9.1 (SAS Institute Inc, Cary, NC); α for all tests was 2-sided and set at .05.

Results

Of the 2355 mothers, 74% were African American, 15% were Latino, and 8% were white (Table 1). The mothers had a mean age of 24 years and the majority, 61%, had a high school education or less.

Maternal Rating of Physician Qualification

Maternal ratings of physician qualification to give advice varied substantially by topic (Table 2). Nearly all mothers rated their infant’s physicians as highly qualified to give advice about fever control (94%) and vaccinations (94%). A somewhat smaller majority rated their infant’s physicians as highly qualified to give advice about feeding (83%) and sleep position (80%). Although most mothers stated that their infant’s physicians were qualified to give advice about bed sharing (69%) and pacifier use (60%), the percentages doing so were lower than for the other topics.

We assessed the association of the nature of physician advice with high ratings of physician qualification regarding the 3 sleep practices. For supine sleep position, 85% of those getting discordant advice and 84% of those receiving concordant advice rated their physician as qualified to give advice about sleep, compared with only 67% of those receiving no advice

($P < .0001$). Similarly, for pacifier use, 70% of those receiving discordant advice and 72% of those receiving concordant advice rated their physician as qualified to give advice about pacifier use, compared with 55% of those who received no advice ($P < .0001$). The pattern was less prominent but also held true for bed sharing: 70% of those receiving discordant advice and 78% of those receiving concordant advice rated their physician as qualified to give advice, compared with 62% of those who received no advice ($P < .05$). Therefore, we included both the nature of physician advice and ratings of physician qualification in all models to be able to assess the independent contribution of each.

In both bivariate and adjusted analyses, high maternal ratings of physician qualification to give advice regarding the 3 recommended sleep behaviors were associated with maternal report of usage of 2 of the AAP recommended behaviors (Table 3). Mothers who rated their infant's physician as highly qualified to give advice about sleep position had twice the odds of reporting usage of the recommended behavior of supine-only sleep (adjusted odds ratio [AOR] 2.1, 95% confidence interval [CI], 1.6–2.6). Similarly, high maternal rating of physician qualification to give advice about bed sharing was significantly associated with maternal report of the recommended behavior of usually no bed sharing (AOR 1.5, 95% CI, 1.2–1.9). The association between high maternal qualification rating and the recommended behavior of using a pacifier while sleeping was not statistically significant.

Nature of Physician Advice

Mothers' report of the nature of physician advice they received regarding the AAP-targeted sleep behaviors varied substantially by topic. The majority of mothers, 56%, reported receiving advice concordant with recommendations regarding supine-only sleep position (Figure). However, only 36% and 14%, respectively, reported receiving concordant advice about bed sharing and pacifier use during sleep. Although only small percentages of mothers reported receiving advice contrary to current recommendations, many reported receiving no advice. The majority of mothers, 54% and 73%, respectively, reported receiving no advice about bed sharing or pacifier use during sleep. A substantial portion of mothers, 28%, also reported receiving no advice about supine-only sleep.

In both bivariate and adjusted analyses, maternal report of the nature of physician advice was strongly associated with their report of using the recommended behavior (Table 4). Mothers who reported receiving concordant advice from their infant's physician had 2.2 times higher odds of reporting usually supine sleep position and 1.9 times higher odds of reporting no bed sharing, compared with mothers who received no advice. Although uncommon, the receipt of discordant advice inconsistent with recommendations was associated with a significantly lower likelihood of supine-only sleep position, (AOR 0.5, 95% CI, 0.3–0.6). Similarly, the receipt of discordant advice was associated with a significantly lower likelihood of pacifier use during sleep (AOR 0.5, 95% CI, 0.4–0.7). For pacifier use, receiving concordant advice was not associated with the recommended behavior.

Discussion

Major Findings

A substantial majority of our study population of predominantly low-income African American mothers rate their infants' physicians as highly qualified to give advice about sleep position. More moderate majorities rate physicians as qualified to give advice about bed sharing and pacifier use. The majority of mothers reported that they had received no advice about bed sharing or pacifier use, identifying an important gap in the receipt of physician advice in these 2 areas. Pacifier use was an outlier, both in terms of maternal

ratings of physician qualification to give advice and the nature of advice received about pacifier use. The different pattern of results for pacifier use could also be related to the fact that so few mothers reported receiving any advice on their use.

Physician Qualification

Our findings indicate that high maternal ratings of physician qualification to give advice on 2 of the 3 sleep practices targeted to reduce the risk of SIDS were significantly associated with maternal report of using recommended behaviors. This suggests that lower ratings of physician qualification to give advice about the recommended sleep practices, compared with other topics that are deemed more in the “medical” domain such as vaccinations and fever control, may undermine physician effectiveness in promoting the recommended behavior. The limited data on patient rating of physician expertise suggests that patients ascribe differing levels of expertise to their physicians, depending on the topic. Wadden and colleagues¹⁸ reported that although obese women were satisfied with their physicians’ general medical expertise, they rated their physicians’ specific expertise in weight management lower than that for overall health care, and the majority indicated that they would not seek their doctors’ help with weight control.

Source and Nature of Advice

Our results document important gaps in the receipt of advice regarding sleep recommendations to reduce the risk of SIDS, including supine-only sleep. Up to 3 years after the AAP policy statement recommending supine-only sleep, only 56% of mothers report getting advice concordant with those recommendations.⁹ This finding is consistent with other work, indicating that only 61% of pediatricians and 46% of family practice physicians discuss sleep position at each visit.¹⁹ Prior work has also indicated that whether parents received advice about sleep position and what type of advice they received varied by practice location. Ray and colleagues²⁰ reported that parents who received care in a private practice setting were more likely to receive the correct instructions on sleep position compared with parents receiving care at an inner-city clinic.

The importance of this gap in the receipt of appropriate advice is underscored by our findings documenting the association of the nature of advice received with maternal reports of recommended behavior, after controlling for maternal ratings of physician qualification. For those mothers who accord their infants’ physicians with expertise in these areas, the lack of appropriate advice represents a crucial lost opportunity to influence maternal behavior to decrease SIDS risks. The high proportion of mothers who reported receiving no advice about pacifier use or bed sharing suggests that there may be barriers to physicians providing this information, including lack of awareness of these recommendations, lack of confidence that these practices are effective in decreasing SIDS risk, concern that these recommendations may interfere with other recommended behavior such as breastfeeding, or simply many competing demands on physician time during preventive care visits.^{21–28} Physician advice may also be countered by other groups recommending discordant advice who have influence on families.

Barriers to Maternal Adoption of Sleep Recommendations

This study provides information on a newly identified barrier, lack of perceived physician expertise in the 3 specific areas of recommended sleep behaviors. Prior work has identified numerous barriers to adoption of SIDS risk reduction recommendations among vulnerable populations, including a belief that infants sleep longer and more comfortably on their stomachs, incorrect advice, general lack of trust in providers, and concerns by physicians and parents that infants who sleep on their backs may choke.^{11,16,17,29}

Recent data suggest that there are persistent or even widening racial and socioeconomic disparities in supine sleep and SIDS rates, despite impressive declines in overall rates.^{13,15,17} The plateau in the rate of prone sleep position and the widening disparities in supine sleep position and SIDS rates are especially worrisome because the Back to Sleep campaign offers a simple, no-cost, effective intervention that might have been predicted both to decrease the overall rate of SIDS and to narrow racial, ethnic, and socioeconomic disparities in SIDS. However, this intervention has not been universally adopted, leaving particular population subgroups with an increased risk of SIDS. The uneven diffusion of an effective intervention has been documented for both “low-tech” and “high-tech” interventions and can create new disparities or widen existing ones.^{30–32} Additional study of maternal rating of physician qualification to give advice about sleep practices should be undertaken to evaluate whether it is related to persistent disparities in sleep position.

Limitations

Our findings may be limited by the fact that maternal reports of the sleep position, bed sharing, and pacifier use during sleep may not represent actual behavior but what mothers thought was desired behavior. Efforts were made to minimize such reporting bias by offering respondents multiple options for reporting frequency of sleep behaviors. The fact that mothers were willing to report behavior discordant with national guidelines suggests that this type of reporting bias is not likely to be substantial. Furthermore, the majority of prior work on sleep position and SIDS is based on maternal report. Maternal report of physician advice may underrepresent the true amount being offered due to incomplete maternal recall. However, there is no evidence to suggest that mothers should differentially recall advice about the 3 targeted sleep practices. We did not collect data on the frequency of repetition of advice, which may have an impact on maternal usage of recommended behaviors over time. Mothers also were asked to report the initial sleep position in which they placed their infants. For older infants who were able to roll over, it is possible that their sleep position changed during sleep.

Finally, data were collected at only 6 sites and our sample was restricted to low-income clients at WIC centers, which restricts generalizability to other populations. Additional studies, focused on different populations, are necessary to assess whether the association documented here between maternal ratings of physician qualification and report of recommended sleep practices holds for mothers in other sociodemographic groups.

Conclusion

This study suggests that not all mothers believe their infants’ physicians are qualified to give advice about the 3 sleep practices associated with SIDS risk reduction: sleep position, bed sharing, and pacifier use. This may lead mothers to ignore or discount advice they believe is beyond the scope of physicians’ expertise, presenting a barrier to adoption of recommended sleep practices and the subsequent reduction in risk of SIDS. These findings suggest that physicians may not always be the most effective source of information about SIDS risk reduction for all mothers. Successful approaches to reduce SIDS risk among vulnerable populations should include careful consideration of both the best messages and the best agent to transmit them.

For those physicians who are offering discordant or no advice about these sleep practices, additional outreach is warranted to support them in providing education to those patients who are open to receiving this advice from them.

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What's New

Our study suggests not all mothers rate their infant's physicians as qualified to give advice on SIDS risk reduction sleep practices. These qualification ratings are associated with following the recommendations. Lower ratings of physician qualification may undermine their effectiveness in promoting recommended sleep practices.

Figure.

Maternal report of nature of physician advice on 3 recommended sleep behaviors. AAP indicates American Academy of Pediatrics.

Table 1

Demographic Characteristics of Study Population

Characteristic	No. (%) (N = 2355)
Race/ethnicity of mother	
African American	1721 (73)
Latino	341 (14)
White	178 (8)
Other	96 (4)
High school education or less	1406 (60)
Mean maternal age (SD), y	24 (6)
Infant age	
0–1 month	908 (39)
2–3 months	427 (18)
4–8 months	1020 (43)
First child	1071 (45)

Table 2

Percentage of Mothers Rating Physicians as Highly Qualified to Give Advice in Selected Topic Areas

Topic Area	No. (%) (N = 2355)
What to do when baby has a fever	2209 (94)
Whether and when to give vaccinations	2203 (94)
What and how to feed baby	1950 (83)
What position baby should sleep in	1869 (79)
Whether baby should share a bed with parent or other adult	1618 (69)
Whether baby should use a pacifier	1400 (59)

Table 3

Association of High Maternal Rating of Physician Qualification With Maternal Report of Usage of Recommended Behaviors

Usage of Recommended Sleep Behavior	Unadjusted OR [*] (95% CI) [†]	AOR [‡] (95% CI)
Supine-only sleep position	2.3 (1.9–2.8)	2.1 (1.6–2.6)
Usually no bed sharing with adult	1.7 (1.4–2.1)	1.5 (1.2–1.9)
Usually use pacifier during sleep	1.2 (1.0–1.4)	1.2 (1.0–1.5)

* AOR = adjusted odds ratio.

[†] CI = confidence interval.

[‡] Adjusted for study year, study site, maternal race/ethnicity, age, education, infant age, nature of physician advice, trusted source of advice.

Table 4

Association of Maternal Report of Nature of Physician Advice With Maternal Report of Usage of Recommended Sleep Behaviors

Recommended Sleep Behavior	Unadjusted OR* (95% CI) [†]	AOR [‡] (95% CI)
Supine-only sleep position		
Concordant with recommendations	3.0 (2.4–3.6)	2.2 (1.8–2.8)
Discordant with recommendations	0.6 (0.5–0.8)	0.5 (0.3–0.6)
No advice	Referent	Referent
Usually no bed sharing with adult		
Concordant with recommendations	2.5 (2.1–3.1)	1.9 (1.5–2.4)
Discordant with recommendations	0.9 (0.7–1.2)	1.0 (0.7–1.4)
No advice	Referent	Referent
Usually use pacifier during sleep		
Concordant with recommendations	1.1 (0.9–1.4)	1.1 (0.8–1.4)
Discordant with recommendations	0.6 (0.5–0.8)	0.5 (0.4–0.7)
No advice	Referent	Referent

* AOR = adjusted odds ratio.

[†] CI = confidence interval.

[‡] Adjusted for study year, study site, maternal race/ethnicity, age, education, infant age, maternal rating of physician qualification, trusted source of advice.