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## **Infant Sleep Environments Depicted in Magazines Targeted to Women of Childbearing Age**

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# Infant Sleep Environments Depicted in Magazines Targeted to Women of Childbearing Age



**WHAT'S KNOWN ON THIS SUBJECT:** Exposures in media may play a large role in affecting individual behaviors. Messages in media were much more likely to result in changes in infant sleep position than were health professional recommendations when the initial AAP recommendations were released.



**WHAT THIS STUDY ADDS:** Messages in print media demonstrating infants in inappropriate sleep positions or unsafe sleep environments may create confusion and misinformation about infant sleep safety and may lead inadvertently to unsafe practices.

## abstract

**OBJECTIVE:** The goal was to evaluate pictures in magazines widely read by women of childbearing age, for adherence to American Academy of Pediatrics (AAP) guidelines for safe infant sleep practices.

**METHODS:** Magazines were included in this study if they had an average female readership of >5 million, circulation of >900 000, and median age of female readers of 20 to 40 years. Twenty magazines met these criteria. An additional 8 magazines targeted toward expectant parents and parents of young children were included, for a total of 28 magazines. Pictures of infant sleep environments and sleeping infants in articles and advertisements in issues of these 28 magazines were analyzed for adherence to AAP guidelines for decreasing the risk of sudden infant death syndrome.

**RESULTS:** A total of 391 unique pictures from 34 magazine issues were included in the analysis. Only 57 pictures (64%) portraying sleeping infants not being held by an adult portrayed the infants in the supine position, and 14.8% of sleeping infants were portrayed as sleeping with another person. Only 36 pictures (36.4%) of infant sleep environments portrayed a safe sleep environment, as recommended by the AAP.

**CONCLUSIONS:** More than one third of pictures of sleeping infants in magazines geared toward childbearing women demonstrated infants in an inappropriate sleep position, and two thirds of pictures of infant sleep environments were not consistent with AAP recommendations. Messages in the media that are inconsistent with health care messages create confusion and misinformation about infant sleep safety and may lead inadvertently to unsafe practices. *Pediatrics* 2009;124:e416–e422

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### KEY WORDS

sudden infant death syndrome, sleep position, impact of media, magazine, advertising

### ABBREVIATIONS

AAP—American Academy of Pediatrics

SIDS—sudden infant death syndrome

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Exposures in media can play a large role in affecting individual behaviors by influencing beliefs and attitudes.<sup>1</sup> Advertisements, in particular, affect behavior by creating positive images. They are successful in communicating that it is normal and desirable to purchase a particular product or to behave in a particular manner.<sup>2-5</sup> Magazine advertisements are most effective and consistent in influencing the intent to purchase a specific product.<sup>6</sup> When magazines are used synergistically with television and Internet advertisements, the influence is even greater.<sup>6</sup>

Social cognitive theory suggests that behavior is influenced by direct experience, as well as by observation of others, and that individuals are able to learn about expected outcomes or consequences of certain behaviors from different aspects of their social environment and to use those expectations in selecting their own behavior.<sup>7</sup> Frequent exposure to health-related messages in the media can have an important impact on individuals' health decisions. Indeed, magazines are the most influential source of health information for women.<sup>6</sup> Advertisements and other messages in the media can influence individuals' perceptions of personal risk and strategies to reduce risk.<sup>8</sup> For example, coverage in the media increases mammogram use for women who do not have regular contact with or access to a physician.<sup>9</sup>

The rate of sudden infant death syndrome (SIDS) decreased from 1.2 deaths per 1000 live births in 1992,<sup>10</sup> when the American Academy of Pediatrics (AAP) first published guidelines regarding infant sleep position,<sup>11</sup> to 0.57 deaths per 1000 live births in 2001.<sup>12</sup> This decrease has stagnated in recent years,<sup>13</sup> however, and SIDS remains the most common cause of death between 1 month and 1 year of age. In 2005, the AAP published its most-recent guidelines for families to

reduce the risk of SIDS, as follows: (1) place infants on the back for sleep, (2) avoid loose bedding, (3) avoid soft sleep surfaces, (4) avoid overheating, (5) consider a pacifier for sleep, (6) use room-sharing without bed-sharing, and (7) avoid prenatal and postnatal tobacco exposure.<sup>14</sup> Because of the consistent influence on individuals' behavior that the media have, it is important to understand whether messages in magazine images are consistent with the AAP SIDS risk-reduction guidelines. Data suggested that women's magazines often model unsafe sleep positions and environments.<sup>15</sup> Furthermore, messages in the media were historically very influential in decisions regarding infant sleep position,<sup>16</sup> and they were more likely to influence changes in infant sleep position than were health professional recommendations when the initial AAP recommendations were released.<sup>17,18</sup> Therefore, the aim of this study was to evaluate pictures in magazines that are widely read by women of childbearing age for adherence to AAP guidelines regarding safe infant sleep practices. We hypothesized that pictures of infant sleep environments in advertisements and articles in these magazines would not be consistent with AAP safe infant sleep guidelines.

## METHODS

Magazine readership data for autumn 2007 were obtained from Mediemark Research.<sup>19</sup> Mediemark Research collects readership data from 26 000 adult consumers each year, in face-to-face interviews, and publishes these results in the Survey of the American Consumer. Readership data are national and generalizable. Selection criteria for magazines to be included in this study were an average female readership of >5 million, circulation of >900 000, and median age of female readers of 20 to 40 years. Twenty magazines met these criteria. An additional

8 magazines targeted toward expectant parents and parents of young children were included, for a total of 28 magazines (Table 1).

Pictures of infant sleep environments and sleeping infants that appeared in articles and advertisements in issues of these 28 magazines published in 2008 were analyzed for adherence to AAP guidelines for decreasing SIDS risk. A maximum of 3 issues per magazine were selected. Issues from February or March, June, and September were selected, to account for any seasonal variability. If a magazine had no sleeping infant or infant sleep environment pictures in 2 issues, then additional issues of that magazine were not selected. Specific criteria were developed for coding each picture. By using these criteria, pictures were analyzed for the following, as applicable: (1) infant's sleep position, (2) sleep location (eg, crib), (3) presence of other people on the same sleep surface as the in-

**TABLE 1** Magazines Included in Study

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|  |
|--|
| <i>Allure</i> <sup>a</sup>               |
| <i>American Baby</i>                     |
| <i>Baby Talk</i>                         |
| <i>CosmoGirl</i>                         |
| <i>Cosmopolitan</i> <sup>a</sup>         |
| <i>Ebony</i> <sup>a</sup>                |
| <i>Entertainment Weekly</i> <sup>a</sup> |
| <i>Essence</i> <sup>a</sup>              |
| <i>Family Fun</i>                        |
| <i>Fit Pregnancy</i>                     |
| <i>Fit Pregnancy Mom &amp; Baby</i>      |
| <i>Glamour</i>                           |
| <i>In Style</i> <sup>a</sup>             |
| <i>In Touch Weekly</i> <sup>a</sup>      |
| <i>Jet</i> <sup>a</sup>                  |
| <i>Parenting</i>                         |
| <i>Parents</i>                           |
| <i>People</i>                            |
| <i>Pregnancy</i>                         |
| <i>Pregnancy and Newborn</i>             |
| <i>Scholastic Parent and Child</i>       |
| <i>Self</i> <sup>a</sup>                 |
| <i>Seventeen</i> <sup>a</sup>            |
| <i>Shape</i> <sup>a</sup>                |
| <i>Star</i> <sup>a</sup>                 |
| <i>Us Weekly</i>                         |
| <i>Vogue</i> <sup>a</sup>                |
| <i>Wondertime</i>                        |

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<sup>a</sup> No pictures of sleeping infants or infant sleep environments were found in these magazines.

fant, and (4) evidence of smoking. In addition, we analyzed pictures for the presence of the following items in the sleep environment: (1) bumper pads, (2) blankets, (3) stuffed animals, (4) pacifiers, and (5) other items. To ensure reliability of the content analysis, each picture was analyzed independently by 2 authors (Ms Joyner and Ms Gill-Bailey), and interrater reliability was calculated. The third author (Dr Moon) analyzed all of the pictures, to ensure reliability and to settle any disagreements.

We calculated the number of pictures that were consistent with AAP guidelines as a proportion of the total number of pictures that portrayed sleeping infants or infant sleep environments. In addition, we assessed the types of magazines that were more likely to contain pictures and advertisements portraying sleeping infants or infant sleep environments. This study received consent-exempt status from the institutional review board at Children's National Medical Center.

## RESULTS

Among the 28 magazine titles, 69 issues were reviewed. Of those magazine titles, 13 had no pictures of sleeping infants or infant sleep environments. A total of 526 pictures from 34 issues were included in the analysis; 365 were in advertisements, 355 in magazine articles, 4 in tables of contents, and 2 in magazine covers. There was a range of 0 to 105 pictures per magazine, with a mean of 37.6 pictures per magazine and a median of 26.5 pictures per magazine. The magazines with the most pictures of sleeping infants and infant sleep environments were those targeted toward pregnant women and mothers of young infants, including *Fit Pregnancy* (105 pictures), *Pregnancy and Newborn* (101 pictures), *Pregnancy* (83 pictures), *Fit Pregnancy Mom & Baby* (68 pictures),

**TABLE 2** Sleep Locations Portrayed in Magazine Pictures

| Location and Environment | No. of Pictures |               |           | Total |
|--------------------------|-----------------|---------------|-----------|-------|
|                          | Infant Awake    | Infant Asleep | No Infant |       |
| Backpack/sling           | 12              | 9             | 2         | 23    |
| Bassinet                 | 0               | 0             | 3         | 3     |
| Bed                      | 15              | 7             | 0         | 22    |
| Car seat/carrier/bouncer | 8               | 2             | 0         | 10    |
| Cosleeper                | 3               | 0             | 4         | 7     |
| Couch                    | 2               | 4             | 0         | 6     |
| Crib                     | 8               | 5             | 81        | 94    |
| Infant hammock           | 0               | 0             | 3         | 3     |
| Mattress/floor           | 7               | 1             | 0         | 8     |
| On parent                | 2               | 0             | 0         | 2     |
| Playpen                  | 1               | 0             | 6         | 7     |
| Rug                      | 4               | 2             | 0         | 6     |
| Swing                    | 1               | 1             | 0         | 2     |
| Total                    | 63              | 31            | 99        | 193   |

and *Baby Talk* (46 pictures). For the analysis, duplicate pictures were counted only once. There were 135 duplicate pictures (all in advertisements), leaving 391 unique pictures (230 in advertisements, 155 in articles, 4 in tables of contents, and 2 in magazine covers). Infants were portrayed as being awake in 170 pictures and asleep in 122 pictures; sleep environments without infants were shown in 99 pictures. Interrater reliability was calculated as 97.2%.

Of the 122 pictures of sleeping infants, 33 portrayed infants being held by an adult or in a sitting position in a car seat, carrier, or swing. Of the infants not being held, 57 (64%) were in the supine position and 32 (36%) in the side or prone position. Ten of the sleeping infants were swaddled. Advertisements contained 66% of the pictures of sleeping infants and were more likely to portray infants in sleep positions inconsistent with the AAP recommendations (39%, compared with 27% in articles). Eighteen infants (14.8%) were sleeping on a surface with another person present; 3 of those were sleeping on the same surface as another infant or child, and 4 were sleeping with a sleeping adult. In the other 11 pictures, the persons present on the same surface were awake. A total of 28

awake infants were portrayed in the prone "tummy time" position.

The location where an infant was sleeping was identifiable in 31 pictures. Sleeping infants were most likely to be in slings or backpacks (9 pictures), adult beds (7 pictures), cribs (5 pictures), sofas (4 pictures), or car seats/carriers/swings (3 pictures) (Table 2). Infants were pictured sleeping with blankets (26 pictures), pillows (10 pictures), stuffed toys (2 pictures), and wedges (1 picture) and on soft surfaces (15 pictures). Seven infants were sleeping with pacifiers in their mouths. There were no pictures in which a person was smoking a cigarette and no pictures in which smoking was implied.

There were 99 pictures of infant sleep environments that did not have an infant visible; 75.5% (71 pictures) were in advertisements. The vast majority (81 pictures) of sleep environment pictures were of cribs, but pictures of playpens (6 pictures), cosleepers (4 pictures), infant hammocks (3 pictures), bassinets (3 pictures), and infant slings (2 pictures) were also found. Of the 99 pictures, only 36 (36.4%) portrayed a safe sleep environment, as recommended by the AAP. The other 63 pictures contained blankets (51 pictures), pillows (15 pic-

tures), wedges (2 pictures), stuffed animals (1 picture), and soft surfaces (5 pictures). In addition, 69 (85.2%) of the 81 cribs pictured had bumper pads. Advertisements contained 72% of the pictures of infant sleep environments without infants visible and were no more likely to portray sleep environments inconsistent with the AAP recommendations (64.8%, compared with 63% for articles).

A total of 17 pictures featured celebrity parents (usually mothers) and their infants. In 15 pictures, the infants were shown sleeping on a surface with soft bedding, such as blankets, quilts, and pillows, or on an inappropriate sleep surface, such as a sofa. Three pictures demonstrated siblings sleeping on the same sleep surface, and 1 picture showed the infant sleeping with the mother.

There were 22 unique pictures that contained the word “comfort” in the caption, showed an infant sleeping on a soft sleep surface that would be comfortable for a sleeping adult, or reported how to soothe an infant. Of these, 19 were advertisements. Less than one half of the advertisements (8 advertisements) portrayed environments that were consistent with the AAP guidelines.

## DISCUSSION

Although a few studies have documented the impact of messages in the media with women,<sup>8,20</sup> this is the first published study to examine messages in the media specifically about infant sleep environment. We found that, 16 years after the initial AAP recommendations to place infants in a nonprone position,<sup>11</sup> more than one third of pictures of sleeping infants in magazines geared toward childbearing women demonstrated infants in an inappropriate sleep position and two thirds of pictures of the infant sleep environment were not consistent with AAP recommendations.

The AAP recommends the back position for every infant sleep time, because of the decreased risk of SIDS.<sup>14</sup> The side position is not recommended, because it is unstable and many infants placed on their side roll to the prone position.<sup>14</sup> More than one third of the pictures of sleeping infants portrayed the infants in the side or prone position.

More than two thirds of the pictures of infant sleep environments contained soft bedding, such as blankets and pillows. The AAP recommends that loose bedding, including blankets, quilts, comforters, and pillows, be removed from the sleep environment.<sup>14</sup> Soft and loose bedding increases the risk for SIDS approximately fivefold, and this hazard is increased when the infant is lying in the prone position (adjusted odds ratio: 21.0).<sup>21</sup>

Bumper pads appeared in 69 of 81 pictures of cribs. The AAP guidelines state that, if bumper pads are used in cribs, then they should be thin, firm, well secured, and not “pillow-like.”<sup>14</sup> Because it often was difficult to determine from the pictures whether the bumper pads were firm or pillow-like, we did not categorize the inclusion of bumper pads in a picture as being inconsistent with AAP recommendations. However, data published after the 2005 AAP guidelines suggested that any type of bumper pad may pose a risk for sleeping infants. Firm, non-pillow-like bumper pads create a potential wedging risk, and soft bumper pads create a potential suffocation risk.<sup>22</sup> In addition, bumper pad ties can strangle infants.<sup>22</sup> Bumper pads were originally designed to keep the infant’s head from accidentally becoming wedged between the cribs slats.<sup>23</sup> In 1986, it was mandated that all safety-approved, full-size, infant cribs must have slats  $\leq 2\frac{3}{8}$  inches apart,<sup>24</sup> which effectively made bumper pads obsolete. Bumper pads continue to be popular, however, partly because of the

belief that bumper pads protect infants from injury.<sup>25</sup> Despite the perception that bumper pads are protective, there is little evidence that infants can injure themselves against crib sides when bumper pads are not present. A review of US Consumer Product Safety Commission data showed that injuries that might have been prevented by bumper pads were largely minor.<sup>22</sup> The repeated appearance in advertisements of bumper pads in cribs condones their use when they are unnecessary and create a suffocation and SIDS risk. In fact, the advertisements and the fact that bumper pads often are part of a complete bedding set imply that bumper pads are necessary.

Cosleepers have been developed as an alternative to bed-sharing, because the latter is not advocated by the AAP. There are 2 basic types of cosleepers. One type is a 3-sided crib that is meant to be placed next to the parent’s bed and often is attached to the adult mattress with straps. The other type is a bassinet-like structure with solid sides that is meant to be placed on the adult bed between 2 adults. Although the AAP acknowledges that cosleepers may be an acceptable alternative, it cautions that no safety standards have been established for cosleepers and no safety data are available from the US Consumer Product Safety Commission.<sup>14</sup> In addition, several of these products contain “memory foam,” which conforms to one’s body shape. Although it does not address memory foam specifically, the AAP recommends a firm surface and warns against soft surfaces because of the increased risk of SIDS and suffocation.<sup>14</sup> Memory foam should not be used with infants.

Slings, infant backpacks, car seats, swings, and carriers were commonly portrayed with sleeping infants. Although there are no specific safety data on any of these products with regard to sleeping infants, there is con-

cern that very young or prematurely born infants might have increased difficulty with decreased oxygenation levels while in car seats.<sup>25,26</sup> There may be similar issues when infants are placed in other sitting devices.<sup>27</sup>

Several different products were advertised with “comfort” as a sales pitch. Infants were portrayed sleeping side by side on a single sleep surface and lying on soft adult surfaces, often with an adult. Phrases such as “cocooning,” “rest assured,” “protective,” “security,” and “endless bonding” imply that comfort is equivalent to safety. Comfort is cited frequently by parents and other caregivers as the primary reason for placing infants prone,<sup>16,28–31</sup> and the implication of comfort displayed in these advertisements is likely to be a powerful influence. Unfortunately, many of these pictures portray unsafe sleep environments, such as bed-sharing with another child or sleeping on a soft surface.<sup>14</sup> These advertisements may provide the parent consumer with a false sense of security when using these products.

Decisions about an infant’s sleep position and sleep environment are not made in isolation. Women receive messages about caring for their infants and safe sleep practices from multiple sources, including senior family members,<sup>32</sup> health care professionals,<sup>32,33</sup> and friends, who serve as role models. Celebrity parents often are also viewed as role models. It is natural for women to imitate what they see from other women with whom they identify, whether from accessible figures in their lives, such as mothers, sisters, and friends, or from celebrity mothers, whose influence is delivered through photographs that make them seem more accessible. When celebrity parents lay their infants for sleep in environments and positions that are inconsistent with AAP guidelines, it is clearly dangerous for the celebrity infants; in addition, these photographs may affect adversely the infants of par-

ents who follow these examples. Celebrity endorsements for cancer screening can influence people to undergo appropriate screening.<sup>34</sup> Similarly, photographs of glamorous celebrities who place their infants in the prone sleep position or in luxurious cribs filled with unnecessary plush bedding reinforce a message that these sleep practices are safe and are to be imitated. It is important that health care professionals be aware of the impact that these celebrity photographs may have on parental behavior and be able to discuss with parents the contradictions and errors in these messages in the media. In addition, celebrity parents and celebrity magazines need to be aware that the public considers celebrities to be role models and it is critically important that, if infant sleep environments are displayed, then they are appropriate and safe.

Advertisements contained 66% of the pictures reviewed, and the pictures were more likely to deviate from AAP guidelines than were pictures accompanying articles. This disparity may be largely because articles and advertisements have different aims. Articles are more likely to focus on providing information to parents and, with the exception of those featuring celebrity parents and their infants, the articles reviewed in this study were more likely to be consistent with AAP recommendations. In contrast, advertisements are designed to sell a particular product and often are focused on a particular demographic group, with the intention of influencing thinking such that consumers will be more likely to purchase the item, regardless of safety recommendations. The advertisements imply that blankets, bumper pads, and pillows are necessary for the infant’s wellbeing, playing to the parent’s desire to provide the best for the infant. Other products are advertised as promoting or improving health and may claim to reduce the risk of SIDS. No

commercial products have been shown to reduce the risk of SIDS, and the AAP recommends that such products be avoided.<sup>14</sup>

This content analysis study is inherently limited because we analyzed only magazines with pictures of sleeping infants and infant sleep environments. Because there were no such pictures in magazines targeted specifically to black audiences, we could not assess what messages in the media might be received by black parents, and we could not determine how those messages might affect the observed racial disparity in SIDS. In addition, we could not assess reliably factors (such as parental and infant sociodemographic features) that may be important predictors of adherence to SIDS risk reduction recommendations. Finally, we did not assess the direct impact of these pictures on parents’ decisions regarding where and how their infant sleeps.

Health care messages must be consistent if they are to be effective. Consumers have a great deal of faith in the safety of products sold, and there is a frequent misconception that, if a product is being sold, then it must be safe to use. We found that messages communicated through photographs in magazine articles and advertisements often are inconsistent with public health messages about safe infant sleep environments. Messages in the media that are inconsistent with health messages create confusion and misinformation about infant sleep safety and may lead inadvertently to unsafe practices. However, messages in mass media and physician advice can complement one another in persuading individuals to adopt preventive health behaviors.<sup>9</sup> Magazine publishers and advertisers must be made aware of the potential health impact of messages contrary to health care recommendations that are communicated through magazines.

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