Child Care Practices in Nonindustrialized Societies

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ABSTRACT. Objective. To described child care practices associated with an increased risk of sudden infant death syndrome (SIDS) in nonindustrialized 19th and 20th century societies.

Methodology. The Human Relations Area Files collection is a unique source of information on the cultures of the world. The electronic version of the Human Relations Area Files represents 200 000 pages of fully indexed cultural material on a stratified random sample of 60 nonindustrialized societies. Using various keyword combinations, texts containing information related to sleeping conditions, social interaction, temperature regulation, feeding, and smoking were identified and using structured questionnaire practices were recorded as being present, absent, or not stated.

Results. Relevant information was identified for 53 societies. None of 4 societies mentioning sleep position used the prone position. Swaddling and restraint were commonly practiced, often for extended periods of time. Most information was available on infant feeding and the predominant pattern was of demand breastfeeding for long periods. In many of the cultures, infants are seen as being the focus of attention, in close contact with and under the constant supervision of the mother, siblings, and other relatives.

Conclusions. The study produced no clear evidence that these primarily nonindustrialized societies followed child care practices likely to protect against SIDS. Despite limitations, the information presented should be of interest to those involved in developing the reduce the risks programs for SIDS prevention, because it highlights the considerable variation in child care practices and emphasizes that health education messages may not always be cross-culturally valid. Pediatrics 2000;105(6). URL: http://www.pediatrics.org/cgi/content/full/105/6/e75; child care, infant care, sudden infant death syndrome, culture, ethnic.

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http://www.pediatrics.org/cgi/content/full/105/6/e75
world. It currently contains nearly 1 million pages of information on over 400 past and present cultures throughout the world. A method of classifying this information (outline of cultural materials) was developed to allow researchers quick access to this research material. In the 1980s, the HRAF developed an electronic publishing program and the cross-cultural CDs were the initial result of this program and contain information on 60 cultures (Table 1).

Cross-cultural researchers ask 4 main kinds of question. The first is descriptive, the second considers the causes of a trait or custom, the third explores the consequences or effects of a particular trait or custom, and the fourth considers associations. In this study, the question asked is descriptive, ie, how many of these 60 cultures followed child care practices that have been associated with an increased risk of SIDS.

METHODS

The HRAF Cross-Cultural CD, IV, Part 1: Childhood and Adolescence and Part 2: Socialization and Education (Silverplatter information) contains vivid full-text original writings extracted from the HRAF describing the cultures of 60 societies in the 19th and 20th centuries. This database was searched using keywords and keyword combinations related to child care practices. All texts were viewed, and if the keyword search identified information related to child care practices, then texts were printed, reviewed, and marked. All printed texts were sorted by society and duplicate texts removed. Data were then abstracted onto a structured questionnaire and frequency tables generated (EpiInfo, Version 6.4c, Centers for Disease Control and Prevention, Atlanta, GA). The questionnaire was designed to seek information on the important risk factors for SIDS, divided into 5 categories: sleeping conditions (sleep position, cot, bed-sharing, undersurface, and pillow use); social interactions (observation of infant and infant carried by mother); temperature regulation (clothing, swaddling, wrapping, and restraint); feeding practices; and smoking practices.

Because it was recognized that many child care practices would not be specifically mentioned, each practice was recorded as being stated to be present, stated to be absent, or not stated as being either present or absent. The sentence of text relating to the particular child care practice was recorded (An appendix detailing these texts is available from authors.)

RESULTS

Information on child care practices was identified in 53 of a possible 60 different societies (Table 1). The amount of information on different child care practices varied markedly between the societies. For example, there was much information on feeding practices, including breastfeeding and weaning, less information on the sleeping position, and no information on extra clothing during illness. In addition, the quantity of information recorded for the different societies varied significantly, eg, many texts relating to child care in Ojibwa society. Table 2 summarizes the results of the 5 different categories of information sought.

There was little information on infant sleeping position. Only 4 positive references were found: 3 indicating that the infant slept on the back. For example, the Toradja, an Asian society, places their infants in the cradle on their back and then a piece of sago branch from which the hard outer bark has been cut off is placed along each arm, so that the child cannot slide back and forth. In a text on the Hopi (North America), the following was noted: “The first 3 or 4 months of my life were spent on my back in the cradle . . . .” The Koreans tap their infants lightly on the stomach when they put them to sleep suggesting that the infants are placed on their backs. In only 1 society, the Masai in Africa, indicated that their infants sleep on the side: “Here the child rests, and, to be sure, on its side, not lying on its back . . . .” No texts were found that indicated infants normally sleep in the prone position.

Twenty-three of 26 societies used separate beds for their infants (cradles, cots, mats, or hammocks), in which the child was placed during the day and, in some cases, for the night as well. Only 3 societies indicated that no separate bed was used for children. References to bed-sharing were identified in approximately half of the societies (25/53). In these cases, the infants were noted to bed-share with their mother (15/23) or with both mother and father (8/23). In 4 societies, there were indications that infants do not bed-share.

There was information on the undersurface of the infant’s bed in 17 of 53. There were many differences in the materials on which infants were put to sleep. Some examples include: “It is laid to sleep on a bed of bark-cloth, padded with many thicknesses, . . . A short supplementary piece of this stuff is kept underneath its body, and changed when necessary. Both this and the other material on which the child is laid is of the kind called mami, of great softness” (Tokpia, Oceania). “Moss or chips of wood are put at the bottom of the cradle, with soft fawn-skins on top of them” (Lapps, Europe). “These cradles use a thin kapok mattress or a folded blanket . . . .” (Central Thai, Asia).

Less material could be found on pillow use. Only 4 times was pillow use explicitly mentioned, and in 3 instances, the pillow was described as being small. In 2 instances, a folded piece of cloth was placed under the infant’s neck. The Lapps put some reindeer hair from the underside of the throat, which is supposed to give most warmth, then a cloth, then reindeer hair again and another linen cloth under the child’s head. The Toradja use a piece of leaf sheet from the sago palm, on which sometimes a little pillow, usually a piece of folded fojea (beaten tree bark) is placed.

The data on social interaction indicate that in these nonindustrialized cultures infants receive a lot of
attention and observation. In most of the cultures, where information on this topic was found (28/29), the child is always observed or with someone, commonly the mother or elder siblings. During the day, infants would be carried around on their backs (indicated 29 times) or kept in the same room (23/24). Examples include, “He remains close to his mother at all times, sleeping alongside her at night and spending the day near her . . . ” (Amhara, Africa). “It sleeps on her bed and is carried about, slung in a cloth on her back, to the fields, to market, and even to fiestas . . . ” (Aymara, South-America). During the night, no infants were noted to sleep in a separate room (27/27).

In some societies (9 indications), differences in the care of male and female infants can be observed. For example, differences in the clothing and a longer nursing period for male infants, eg, Taiwan Hokkien (Asia): “Nearly every mother we talked to told us that she weaned her daughters a couple of months earlier than her sons. The average age of weaning for boys is 17 months, for girls 15 months.”

References to clothing were found in 19 societies. Societies dress their infants in very different ways. When amounts of clothing were indicated, it seemed that infants were more likely to be dressed lightly (4/7) or not at all (2/7). The Aranda (Oceania), for example, never dress their infants. On Sunday Island, a single strand of human hair string is tied around its hips and pubes.

In other societies (19/53), infants were wrapped or swaddled. In some Asian, Amerindian, and European societies, infants were immobilized through swaddling, cradle-boards, or similar techniques. Mostly the infants wear these swaddling clothes all the time (6 indications of 19), during wakefulness as well as during sleep, eg, “The infant spent much of its first 9 month swaddled from chin to toe . . . ” (Iroquois, North America). One text indicated that swaddling was not used.

Eleven texts gave information of restraints which would have helped prevent the infant from rolling over, eg, the use of cradle-boards by the Hopi: “A baby, until it had learned to walk, formerly lived much of his life tied and wrapped in a cradle-board. . . . ” The Toradja (Central Celebes, Asia) fasten little ropes on the cradle that are stretched crosswise across the chest and stomach of the infant to prevent it from falling out through it movements. No indications could be found on measures being taken.

### TABLE 2. Child Care Practices Related to SIDS Risk in 53 Nonindustrialized Societies as Determined From HRAF Cross-Cultural CD, IV

<table>
<thead>
<tr>
<th>Practice</th>
<th>Information Available</th>
<th>Data: Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Sleeping conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep position</td>
<td>19</td>
<td>61%</td>
</tr>
<tr>
<td>On the back</td>
<td>16</td>
<td>51%</td>
</tr>
<tr>
<td>On the side</td>
<td>3</td>
<td>9%</td>
</tr>
<tr>
<td>Separate bed for infant*</td>
<td>26</td>
<td>84%</td>
</tr>
<tr>
<td>Bed-sharing*</td>
<td>29</td>
<td>96%</td>
</tr>
<tr>
<td>Undersurface of infant bed indicated</td>
<td>17</td>
<td>54%</td>
</tr>
<tr>
<td>Pillow use</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Social interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant always observed</td>
<td>29</td>
<td>94%</td>
</tr>
<tr>
<td>Infant carried on the mother’s back</td>
<td>30</td>
<td>96%</td>
</tr>
<tr>
<td>Infant in a separate room at night</td>
<td>27</td>
<td>94%</td>
</tr>
<tr>
<td>Infant in separate room during day</td>
<td>24</td>
<td>79%</td>
</tr>
<tr>
<td>Gender differences in child care</td>
<td>10</td>
<td>39%</td>
</tr>
<tr>
<td><strong>Temperature and clothing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication on clothing of infant</td>
<td>19</td>
<td>61%</td>
</tr>
<tr>
<td>Swaddling/wrapping</td>
<td>20</td>
<td>69%</td>
</tr>
<tr>
<td>Other restraints used</td>
<td>10</td>
<td>34%</td>
</tr>
<tr>
<td>Hats or other head covers worn</td>
<td>4</td>
<td>14%</td>
</tr>
<tr>
<td>Babies hair shaved</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>Extra clothing during illness</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Heating of sleeping room</td>
<td>7</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Infant feeding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of dummy or pacifier</td>
<td>13</td>
<td>45%</td>
</tr>
<tr>
<td>Thumb-sucking encouraged</td>
<td>6</td>
<td>21%</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>48</td>
<td>100%</td>
</tr>
<tr>
<td>Weaning age indicated</td>
<td>35/48</td>
<td>96%</td>
</tr>
<tr>
<td>&lt;1 y</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>1–2 y</td>
<td>7</td>
<td>21%</td>
</tr>
<tr>
<td>2–3 y</td>
<td>14</td>
<td>41%</td>
</tr>
<tr>
<td>&gt;3 y</td>
<td>12</td>
<td>34%</td>
</tr>
<tr>
<td>Indication of feeding schedule</td>
<td>25</td>
<td>83%</td>
</tr>
<tr>
<td>Demand fed</td>
<td>25</td>
<td>83%</td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father smoking</td>
<td>15</td>
<td>51%</td>
</tr>
<tr>
<td>Mother smoking</td>
<td>13</td>
<td>44%</td>
</tr>
<tr>
<td>Society smoking</td>
<td>16</td>
<td>52%</td>
</tr>
</tbody>
</table>

* In a number of societies, texts were identified that indicated that the infant had a separate bed/sleeping place but also shared the bed with mother/parents (n = 8) probably reflecting different sleeping practices during the day and night.
to prevent the infant’s head from being covered by bedding but some societies place a cloth (supported by a frame) over the head of the infant to protect it from the sun or flies.

Search for information on use of head coverings and hats, the practice of shaving an infant’s hair or using extra clothing during illness, did not reveal much information. Seven societies had information on heating the sleeping room, eg, Central Thai: “The cradle is placed on the side of the bed away from the fire. . . .”

Thirteen societies were found to give their children pacifiers and dummies. To calm their infants, they use various things to suck, like fruits, fat wrapped in a piece of cloth, the thumb of mother or father, or the breast (sometimes that of another women such as the grandmother). Only 2 indications of societies encouraging thumb-sucking were found.

Information on breastfeeding was identified in 48 societies, with the remaining 5 societies yielding no information on infant feeding. There were no texts showing that mothers do not breastfeed and only 1 reference to artificial feeding. Weaning takes place late compared with many Western developed societies. Most of the societies (14/35) wean their infants at 2 to 3 years of age, and in 12 societies, the children are older than 3 years of age, eg, Amdaman women never wean their infants as long as they are able to suckle them. In Korea, mothers wean their infants normally at 2 or 3 years of age, but when there are no younger children, they suckle their children until they are 7 or 8 years old, sometimes even to 10 or 12.

Most of the mothers (in 25 societies) feed their infants on demand, and in no instances were fixed feeding times or intervals noted. Two examples: “There was no set of time for nursing, babies were nursed whenever they cried . . .” (Ojibwa, North America) and “Children are breastfed at intervals determined by the hunger of the infant . . .” (Tarahumara, North America). In many of the societies, infants have constant access to the mother’s breast, even at night: “Infants are nursed whenever they cry or show signs of hunger, throughout the day and night. Parents do not enjoy the night feeding that babies usually demand, but it is unthinkable that a baby should be denied the breast if he cries” (Garo, Asia).

Thirteen indications could be found showing that men in the society smoke, but only 1 indication of quantity, ie, in Tlingit society “. . . attempts are made to rival one another in smoking, even to the point of reaching a stage similar to intoxication.” Less indications (9) could be found on mothers smoking, but in some societies only the women are expected to engage in smoking (Guaraní, South America). The Chukchee mothers give their pipes to sucking infants to quiet their crying. Overall, 14 societies had information suggesting that it was common to smoke.

**DISCUSSION**

The HRAF have data on over 400 cultures but the electronic version on the Cross-Cultural CD, IV (Childhood and Adolescence and Socialization) used in this study has data on only 60 societies. This is a subset of the HRAF known as Probability Sample Files that stratifies the world into 60 cultural areas and randomly selects 1 case from each area. Inclusion of societies in this subset required that certain criteria be met, eg, that 1 of the ethnographers stayed for more than a year. Although it is suggested that in cross-cultural research random samples of 20 to 30 cultures may be sufficient, we opted to include all 60 cultures and keyword searches used identified data of interest in 53 of these 60 societies.

The texts of the HRAF are potentially rich in qualitative data but there is no consistency in data quantity and quality and there is no structured format. Thus, the pitfalls of any retrospective study will be important to consider when assessing the results of this study. Although it is suggested that cross-cultural researchers can ask questions about causation, we did not attempt to do this. From the perspective of epidemiology such interpretations would need to be considered with considerable caution. We attempted to document either positive or negative mentions of a particular practice, to emphasize the amount of missing data. Although it might be argued that no mention of a practice may be more likely to indicate its absence, it is also possible that data collection will be biased toward that information perceived to be different or unusual. Thus, if the author of the text considered back sleep position normal, he might not mention it specifically. Another problem is that these data give little insight into the range of practices. The qualitative descriptions give the impression that everyone in a culture follows a particular practice. This is unlikely to be the actual situation.

Despite these very important limitations, these qualitative data emphasize the vast numbers of possible permutations and variations in infant and child care and build up a composite picture of infant care in these nonindustrialized societies. Infants are seen as the focus of attention and are in close contact with the mother, siblings, and other relatives. Many infants are carried on the back and hip or placed in a swinging cradle or hammock under close supervision. Swaddling and restraint are commonly practiced, often for extended periods. Sleep position is only indicated in 4 societies, making it impossible to draw conclusions on this important practice. Assessing sleep position together with swaddling may indicate that a greater proportion of infants sleep on their backs (19/20) because it might be assumed that a swaddled infant is unlikely to be strapped or immobilized prone. However, this assumption cannot be verified. At night, placing infants in separate rooms would seem unusual and many of the infants share the sleeping place (as opposed to the bed in the Western sense) with the mother and, less commonly, both parents. Two references were identified indicating that “overlaying” may be perceived as a potential hazard, “If you lay your child down beside you, do not crush it in your sleep; be careful if it rests by your side . . . ” (Ona, South America). In a number of societies, there are indications that the infant is placed separately to the mother on a mat, whereas
others indicate close physical contact. “Babies usually sleep next to the mother on the tatami mats or hard platforms…” (Taiwan, Hokkien Asia) and “The baby spends much of the night in its mother’s arms cradled between her breasts… and will sleep in the same hammock with its mother…” (Tucano, South America). These texts help to emphasize that the term bed-sharing can apply to a range of very different circumstances.

The information on cots, hammocks, cradles, and cradle-boards offers a number of interesting perspectives. Approximately half of the societies used some form of separate bed for the infant but in many cases the impression is given that infants are in somehow confined within this device and often a soft material is used beneath the infant. This impression contrasts with the image of a Western infant placed within a large spacious cot, with color-coordinated duvets, sheets, and cot borders. Pillows have been identified as a risk factor for SIDS and advice has been given that these items should not be used. The data on pillow use in the HRAF are sparse but there is indication that some societies use small pillows.

Information on clothing, room heating, and temperature regulation varies widely reflecting the wide range of climatic regions from where these different cultures come. Unexpectedly, no reference was found relating to extra clothing during illness. This might have been expected because this would seem to be a common belief in many cultures, both industrialized and nonindustrialized.

Most information was available on infant feeding and the consistent pattern was of demand breast-feeding for long periods. Only 1 mention could be found of artificial feeding (goat’s milk) if the mother did not have adequate breast milk. Interestingly, a number of societies mentioned the use of dummies or pacifiers, indicating that such devices have acceptance in some nonindustrialized societies.

Smoking practices were mentioned in some of the societies, often within the context of when they were excessive or unusual, e.g., giving infants or children pipes or cigarettes. It is assumed that the substance smoked is tobacco but this may not necessarily be the case.

Although some may be tempted to assume that what is traditional is natural and, therefore, better, it must be remembered that many of these societies experienced high rates of infant mortality. However, at the same time, it is reasonable to assume that a number of traditional practices will develop for good reasons, and prevention of SIDS may be 1 such reason.

Although this comparative review provides some interesting insights into aspects of child care, it is not possible to conclude that these primarily nonindustrialized societies followed practices which helped reduce the risk of SIDS. This study does, however, emphasize the diversity of child care and should alert us to the possibility that education messages to reduce the risk of SIDS may need to be modified for certain cultural groups.

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REFERENCES

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