

Understanding Navajo Parents' Beliefs About Cradling and Early Mobility Practices



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Introduction

Parents throughout the world commonly use baby equipment to soothe babies, to keep them safe, and to allow their caregivers opportunities to tend to other children or household duties. Often parents believe that baby equipment will help facilitate their child's development (Chagas, Mancini, Tirado, Megale, & Sampaio, 2011; DiLillo, Damashek, & Peterson, 2001; Pin, Eldridge, & Galea, 2007). This chapter will examine the use of both traditional and modern-day baby equipment among Navajo families. Cradleboards and baby walkers meet the practical needs of parents on the Navajo Nation and help to instill values that are part of their unique culture.

Background Information

The Navajo, or *Diné*, are American Indians who live in the southwest region of the United States in a sovereign nation that spans parts of Arizona, New Mexico, and Utah. The Navajo Nation is 27,000 square miles with a population of approximately 173,000 individuals and has the largest population of American Indians living on a reservation in the United States (Norris, Vines, & Hoeffel, 2012). The Navajo Nation is considered a rural area with a population density of 6.33 people per square mile compared to the average population density in the United States of 345 people per square mile (Arizona Rural Policy Institute, n.d.). Many Navajo families live in very

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rural and isolated locations with limited access to healthcare, transportation, and nutritious food (Bowie, Brown, Clark, Sawyer, & Worden, 2018).

Poverty is widespread on the Navajo Nation. The median household income is \$25,963, with 41% living below the federal poverty level (Arizona Department of Health Services, 2019) and an unemployment rate estimated to be between 26.12% and 28.32% (Navajo Nation Division of Economic Development, 2010). Fifty percent of all children on the Navajo Nation live in overcrowded conditions in households with a family income of less than \$15,000 (RPI Consulting, 2011). The majority (59%) of Navajo Nation housing structures are single-family homes, and, of these, 17% are mobile homes and 11% are *hogans* (traditional Navajo homes originally constructed of logs and earth). Homes within the Navajo Nation are generally smaller than the average home in the United States, with Navajo homes having a median of three rooms while the US median is 5.4 rooms (RPI Consulting, 2011). Half (51%) of all individuals living within Navajo tribal lands report having incomplete bathroom facilities, and more than half (55%) report having incomplete kitchen facilities. Complete bathroom facilities include hot and cold piped water, a flush toilet, and a bathtub or shower. Complete kitchen facilities were defined as having hot and cold piped water, a range or cook stove, and a refrigerator (RPI Consulting, 2011). In contrast, in the United States, 99% of housing units possess complete bathroom and kitchen facilities. Lack of complete facilities is likely related to the absence of overall infrastructure, along with the income constraints of Navajo families (RPI Consulting, 2011).

Navajo Traditional Beliefs

In Navajo philosophy, *K'e* is a concept that expresses the social and familial relationships between the child and the people in his or her world and is the basis for the child's self-identity as a Navajo person (Begay, 2018). A Navajo child's identity develops from family relations, clan membership, and the location of the family home on the Navajo Nation. Interdependence between family and community members is highly valued and provides basic support for kinship and economic activities (Hossain & Anziano, 2008). Traditional Navajo society consists of matrilineal family groups within an extended family structure, where women are the owners of the land and livestock and transfer of property follows the female line (Blanchard, 1975). Along with mothers, grandmothers and aunts are responsible for child rearing in the traditional Navajo structure. Some research suggests that parent role differentiation is significantly smaller in Navajo culture than in the Anglo culture, and Navajo fathers' involvement with children tends to be higher than that of men in most other cultures (Hossain & Anziano, 2008).

In the 2000 census, about 68% of Navajos used their own language at home, and about 26% of Navajos did not speak English well (Ogunwole, 2006). Navajo

parents and grandparents impart much of their cultural knowledge, often in the Navajo language, through traditional stories that reinforce the teachings of how to live in balance with nature and with others. These stories reinforce *K'e* (the child's sense of belonging), help children to understand the consequences of behavior, and encourage problem-solving and decision-making (Frankland, Turnbull, Wehmeyer, & Blackmountain, 2004). The ultimate goal for human life is to be happy and in harmony with the universe. Knowledge that is needed to achieve happiness and harmony includes proper mind development, survival skills, positive relationships, and understanding and relating to the environment and home (Benally, 1994). Navajo values are encompassed in the Blessing Way teachings and the Protection Way teachings that offer practical rules for living everyday life and encourage harmony and avoidance of negativity. The Blessing Way teachings offer guidance on how to have a positive frame of mind and to make good choices (e.g., possess kindness, express a thankful attitude). The Protection Way teachings give direction on behaviors to avoid (e.g., avoid being lazy, avoid negative thoughts; Begay, 2018).

Navajo Parenting Practices

Many Navajo parents have adopted modern parenting practices of the majority culture of the United States; however, traditional beliefs and practices continue to influence parenting on the Navajo Nation. Navajo children are thought to enter the world with predetermined identities, and parents are expected to encourage each child's uniqueness (Connors & Donnellan, 1998). Children are encouraged to learn about themselves and about their environment so that they can more easily overcome mental and physical hardships (Franklin et al., 2004). Family members model and explain self-regulated behavior and self-management strategies rather than directly enforcing them (Deyle & LeCompte, 1994).

Use of Infant Equipment

One area of parenting practice in Navajo culture, which is affected by both traditional and modern beliefs, is the use of infant equipment. This equipment can reinforce the idea of *K'e*, as positioning of equipment can allow the infant to observe, take part in the family, and further a sense of belonging. Cultural parenting practices, including the use of equipment, could potentially impact the developmental trajectories of an infant. In early intervention practice with Navajo families, two pieces of infant equipment are commonly used in Navajo households: the traditional cradleboard and the modern baby walker.

Traditional Infant Equipment: Cradleboard

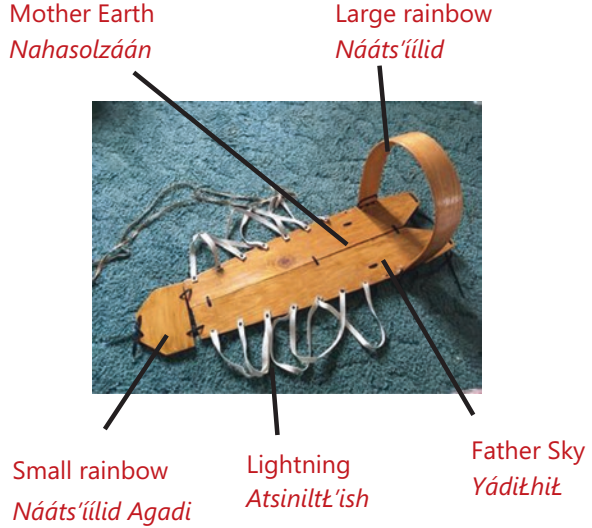
The Navajo cradleboard is a “traditional kind of Native American baby carrier. The baby is swaddled (wrapped tightly in a thin blanket) and strapped to a specially designed flat board, usually made of a wood plank” (Native Languages, 2015, “Native American Cradleboards,” para. 2). The cradleboard is important to the spiritual development of the child because it resonates with the natural elements of the world (Claw, 2018). The cradleboard is believed to offer many benefits to the infant as he or she transitions through the first few stages of life. These benefits include physical strength and posture, the promotion of good sleep habits and self-regulation, and perhaps most importantly spiritual development that aligns with the Navajo belief of *K’e* and following the Blessing Way (Claw, 2018).

Use of the cradleboard provides a balanced foundation for the baby to begin a spiritual and meaningful life. In conversation with Navajo traditional medicine man Lorenzo Max, he reports that the Navajo believe everything in nature and life is balanced or paired between male and female energies. Similarly, one side of the cradleboard is believed to be female (“Mother Earth”) and the other side is male (“Father Sky”), with energy at the center of the cradleboard representing a balance between the two for love, happiness, and understanding (Calamity, 2011). This spiritual energy is believed to transfer to the baby in the cradleboard to grow up with compassion and less stress and depression (L. Max, April 1, 2019, personal communication). Construction of the cradleboard has great spiritual significance. The cradleboard frame is usually made of a wooden backboard with a wooden hoop (called the “rainbow”) attached to the top of the board over the infant’s head. The rainbow is intended to protect the baby’s head if the cradleboard should fall over. It is also believed to bring good thoughts to the child and is often decorated in beadwork made by a member of the family (Beeshligai, 2018). “My grandparents and parents tell me the rainbow helps him [my child] from getting bad dreams and nightmares” (Navajo parent, June 27, 2019, personal communication) (Fig. 1).

The backboard consists of two long wooden planks which are made of cedar, pine, or another type of strong wood. The wood represents the tree of life, thought to be strong and stable. The strong and straight qualities of the wood are believed to transfer to the child using the cradleboard. Likewise, some Navajos believe that if a tree is felled, broken, or struck by lightning during a storm this can foreshadow tragedy or a violent death for the child (Jett, 2005). Wood for the cradleboard is taken from the east side of the tree after corn pollen is sprinkled. The orientation of the wood on the tree should match the orientation of the cradleboard, with the lower area by the feet and the upper area by the head. Prayers may be recited or sung during the construction of the cradleboard, and a traditional ceremony would be held when the cradleboard is completed (Jett, 2005).

When the infant is on the cradleboard, he or she is swaddled in a blanket and strapped tightly to the board with the use of cords. These cords are strung through 12 loops in a zigzag pattern across the baby, representing lightning. The cords also

Fig. 1 Navajo cradleboard with labeled parts



hold the baby's arms straight at their sides and the legs straight and together on the board, both of which are believed to help the child develop good posture for a correct walking form (Manolescu & Noble, 2005).

Straps, cushions, and blankets for the cradleboard are traditionally made from sheepskin and buckskin (Beeshligai, 2018). A towel or blanket is rolled up and is placed between the baby's legs on the board (Chisholm, 1983), which reduces chafing. At the bottom of the board is a footplate where the baby's feet rest, representing the earth on which the child will stand when he or she is able to walk on their own (Beeshligai, 2018). Navajo parents believe the board encourages babies to have good posture and develop strong and straight legs and eventually to stand tall and not slouch (Beeshligai, 2018; Manolescu & Noble, 2005), rather than become bow-legged (Manolescu & Noble, 2005).

Oftentimes, the cradleboard is propped in such a way that the infant can watch what their family members are doing. The cradleboard is easily transportable and can be moved to the area where the mother is working (Claw, 2018). According to Chisholm (1978), although an infant in a cradleboard has less physical contact with its mother than an infant carried in its mother's arms, the infant in the cradleboard often spends more time in physical proximity of others. Because the infant is easily transported in the cradleboard even when sleeping, the infant may have increased social interactions as compared to an infant who is placed in a crib in a separate room for sleep (Claw, 2018). "Sometimes parents put their boards up so the baby can look around and visualize. They say it will help the baby's coordination... because he would see people walking around. My mom would always tell me to put the board up, so he could watch people" (Navajo parent, June 27, 2019, personal communication).

Cradleboards are used when the child needs to be calmed and to promote sleep. Babies are strapped in when they grow tired and fussy and will often calm as soon

as the straps are placed around them (Claw, 2018; Johnson, 2018; Manolescu & Noble, 2005). Most families use cradleboards during the day and again for sleeping during the night.

The Navajo initiate use of a cradleboard with a newborn infant after the umbilical cord falls off (Beeshligai, 2018; Johnson, 2018). The time that an infant spends in a cradleboard varies; a newborn infant may be in the cradleboard for 15–18 hours a day (Chisholm, 1983), and the total time decreases as the baby grows, sleeps less, and becomes more active. Navajo families typically use cradleboards with infants through the first year of life, and many families use it well into a child's toddlerhood (Claw, 2018; Manolescu & Noble, 2005). Families often stop using a cradleboard when the child no longer expresses an interest or need for its use or when the child becomes too tall and the straps too short to secure his or her body to the board (Chisholm, 1983; Claw, 2018). "Most kids would get out (stop using it) at about 6-7 months, but some stay in...past the time when they are able to walk. They actually like being in the cradleboard" (Navajo parent, June 27, 2019, personal communication).

Using the cradleboard creates a comfortable routine for the child and prepares the child for self-regulation (Beeshligai, 2018). "It's comforting for him when he's wrapped. When you tie it, it's like a safe spot (for the baby). They say when a baby is first born they feel lost in a way so that's why they put them close to their mother so they can feel close" (Navajo parent, June 27, 2019, personal communication). When the baby grows hungry or rouses from sleep, he or she is taken out of the cradleboard for feeding, comforting, or playing. The times when the baby is strapped and unstrapped from the cradleboard provide opportunities for social contact between the baby and the mother (Chisholm, 1978). In all these ways, the use of the cradleboard fosters attachment and bonding between the mother and baby as well as between the baby and other family members. The use of the cradleboard sets the stage for emotional and mental development (Beeshligai, 2018).

The sense of attachment and belonging is consistent with the cultural belief of *K'e* (Beeshligai, 2018). Navajo families believe that when the child grows up after using a cradleboard, he or she will walk in beauty, which means he or she will live a positive life, think good things, and receive good things in return (Beeshligai, 2018; Begay, 2018). Thus, the cradleboard promotes physical development, supports the child's sleep and self-regulation, and promotes the Blessing Way teaching of emotional stability and connection between the baby and his or her family (Beeshligai, 2018; Claw, 2018). "(The benefits are) that it keeps away nightmares, helps with (the baby's) posture, gives them great sleep, and straightens the feet" (Navajo parent, June 27, 2019, personal communication).

When the infant is on the cradleboard, he or she is often tightly swaddled and wrapped with little ability for active movement or exploration. As a result, health-care practitioners have questioned whether or not the use of the board may have adverse effects on motor skills. However, there has been no evidence that time in the cradleboard results in delayed or atypical motor development (Chisholm, 1978, 1983). One classic study found that Hopi children were slightly delayed in walking development as compared to Anglo children, but this effect was found in Hopi

infants regardless of whether or not a cradleboard had been used with the infant (Dennis & Dennis, 1991).

Because of the practice of swaddling the infant's legs together in extension on the cradleboard, there is concern for developmental hip dysplasia. In development, the position of maximal stability of the hip bones is when the legs are bent and spread apart, so that the femur stays in the hip joint. Hip dysplasia refers to an abnormal development of the hip joint where the head of the femur is not completely set into the hip socket (Shaw & Segal, 2016). In the general population, hip dysplasia occurs at a rate of approximately 1 in 1000 babies (International Hip Dysplasia Institute, 2018; Shaw & Segal, 2016). Prolonged positioning of an infant's legs so that the hips are extended and adducted (straight and together) causes the muscles of the hip to pull on the femur so that it is more vulnerable to being pulled out of the hip socket (Clarke, 2014). In this position, the infant's hip joint has minimal direct contact between the femur and the pelvis, with increased risk of dislocation or dysplasia. Hip dysplasia can lead to several problems later in life if not corrected, ranging from a small limp to a painful gait and early-onset arthritis (International Hip Dysplasia Institute, 2018; Shaw & Segal, 2016; Wenger, 2013).

A higher incidence of hip dislocation (3.3%) has been historically noted in Navajo infants who were positioned on a cradleboard (Clarke, 2014; Schwend, Pratt, & Fultz, 1999; Shaw & Segal, 2016). In a 34-year follow-up study of Navajo children originally diagnosed with hip dysplasia that remained medically untreated, 40% of hips continued to display abnormalities on radiographs into adulthood (Schwend et al., 1999). Once Native American parents began using absorbent diapers in the 1940s, which helped to spread the baby's legs into abduction, there was a decrease in dysplasia among Native American infants (Schwend et al., 1999). As stated earlier, infants are often positioned on the cradleboard with a cloth between their legs to prevent friction and irritation (Chisholm, 1983). This cloth may also help spread the legs for safe hip positioning to prevent dysplasia, but because there are no recommendations as to the size of the cloth, the legs may still be too close together.

Modern Infant Equipment: Baby Walkers

As the infant grows older and more active, use of the cradleboard decreases. Another piece of infant equipment that is used frequently by the Navajo is the modern baby walker. In a study by Chagas et al. (2011), the authors noted that cultural beliefs influence the use of modern infant equipment. Parents have voiced that they use walkers with their infants with the belief that it will help their child learn to walk earlier (Chagas et al., 2011). From observation of Navajo families, a baby is placed in the walker multiple times a day for anywhere from 30 to 60 minutes to a few hours at a time. "(Walkers are beneficial) because they get them (children) to strengthen

their legs and coordinate their steps. So, when he's ready to learn to walk, they can do it on their own" (Navajo parent, June 27, 2019, personal communication).

Consistent with the Navajo belief of *K'e*, Navajo parents may use a baby walker to promote independent movement, which furthers a sense of self-identity within the family. Begay (2018) describes that motor skills and physical strength are valued in the Navajo culture. Running before the sun comes up in the morning is a traditional practice that is supported by the Navajo teaching of survival and pertains to the physical and mental well-being of a person (Calamity, 2011). The Protection Way teaching also supports physical activity through its instruction to "avoid being lazy" and "develop self-discipline" (Begay, 2018).

Throughout the world, parents often believe that when babies are in walkers they can be more independent (Siegel & Burton, 1999) and explore their environment in a safe way (Chagas et al., 2011; DiLillo et al., 2001). However, walkers have long been recognized by medical associations as a safety hazard, with high numbers of injuries and emergency department visits resulting from its use. Falling down stairs or tipping on uneven flooring may result in head injuries, fractures, or even death (Badihian, Badihian, & Yaghini, 2017; DiLillo et al., 2001; Sims, Chounthirath, Yang, Hodges, & Smith, 2018). Infants in walkers have also been found to suffer greater numbers of burns as the infant in the walker can reach dangerous items such as a pot of boiling water on a stove. Other recorded injuries include drownings from falls into water, such as a bathtub, and poisonings from access to medications and substances thought to be out of reach (Sims et al., 2018). The infant is able to move much faster in a walker with wheels, so a parent is not always able to reach the child before an accident occurs. Additionally, parents often mistakenly believe that the infant is safely contained in the walker, and the caretaker does not supervise the infant as closely as is necessary to prevent injuries (American Academy of Pediatrics, 2018; Sims et al., 2018).

Walker sales have been outlawed in Canada as a result of injury risk associated with their use (Woudstra, 2018), and the American Academy of Pediatrics (2001, 2018) has called for a ban on walker sales in the United States. One result of the concern for injury from use of walkers has been the promotion of the use of alternative infant equipment such as exersaucers or jumpers, which do not allow unrestricted mobility as the walker does (DiLillo et al., 2001). However, equipment such as this has not been widely adopted within Navajo families, and the baby walker continues to be a popular item in many Navajo homes.

In contrast with concerns for increased injury risk in research reports, families and health providers on the Navajo Nation report they are not aware of injuries from walker use. This may be partly due to the fact that the majority of Navajo homes are one-story dwellings without stairs. Interestingly, Navajo families report that walker use actually prevents some burn injuries. Many homes have freestanding wood stoves in the middle of a room as a heat source, and families report the wide base of the walker prevents the infant from getting too close.

Parents report various reasons why they use walkers with their infants. When the baby is fussy, Navajo parents will use the walker to help soothe him or her. Many families believe that using the walker also offers the child a change of position that

helps keep them happier throughout their day (Chagas et al., 2011). Placing an infant in a walker also can give the parent time to complete household chores without needing to carry the baby (Chagas et al., 2011; DiLillo et al., 2001; Siegel & Burton, 1999). Another reason Navajo families use infant walkers is that the babies are off of the floor. Many traditional homes have dirt or concrete floors which families consider unsafe for their babies. More than half of individuals residing in the Navajo Nation live in structures that are reported to be dilapidated or requiring serious repairs, many with worn flooring (RPI Consulting, 2011). In traditional *hogans*, there is a single open room. This makes it easy for the parent to keep an eye on the child who is in the walker and to ensure the child safely explores the environment.

Evidence is inconclusive regarding the impact of walker use on motor development (Abbott & Bartlett, 2001; Australian Physiotherapy Association, 2007; Bartlett & Fanning, 2003; Garrett, McElroy, & Staines, 2002; Pin et al., 2007). Time in an infant walker is associated with decreased floor playtime for the developing infant. Unrestricted floor play is considered important for balanced movement exploration and cognitive development (Siegel & Burton, 1999). The Australian Physiotherapy Association has developed a position statement (November 2007) warning of the impact of walker use on decreased floor play and independent mobility exploration for infants. Although some studies have reported that infants who experience frequent walker use, especially early in upright positioning, are delayed in the development of motor skills including walking, other research studies have not found this same effect (Garrett et al., 2002; Pin et al., 2007). Regardless, at a minimum, walkers do not cause an accelerated rate of development of independent walking skills as many parents mistakenly believe (Pin et al., 2007). Delays in walking may be more prevalent when walkers are used with children who experience developmental delay (Siegel & Burton, 1999).

Some Navajo parents have been observed to begin the use of a walker when an infant is not yet able to stand on their own, as early as 4–6 months old, before their feet touch the floor when placed in the walker. At this age, the infant does not yet have the balanced muscle strength to maintain an upright posture when placed in the walker, and as a result, the infant may overutilize extensor muscles in an effort to remain upright (Pin et al., 2007). In some infants, this may alter motor patterns or delay acquisition of normal balanced upright posture in standing and walking, particularly if use of the walker limits time of independent movement exploration on the floor (Siegel & Burton, 1999; Simpkins & Raikes, 1972). No studies have been done on average age for independent walking in the Navajo, so no conclusions can be made for the impact of walker use in this population.

Conclusions

Practitioners working with different cultural groups such as the Navajo need to develop an understanding of the beliefs guiding parenting practices that may influence child development. Although there are potential safety concerns with use of

infant equipment, there are also many benefits. Educational programs for Navajo parents on safe use of cradleboards and infant walkers need to be culturally sensitive to maintain respect for the Navajo values and heritage.

The concept of *K'e* should be embraced when working with Navajo families. Positive aspects of the use of infant equipment should be emphasized, including harmony with nature, overall self-regulation, strength, and balance. Respect for cultural and family values always needs to guide educational and developmental recommendations. The Navajo cradleboard has great cultural meaning with many positive effects, especially on social-emotional development, when used safely with infants. The baby walker can be an enjoyable experience for an infant and fits the practical needs of many Navajo families. Use of this equipment by Navajo families supports the belief of *K'e*, as expressed through the development of supportive relationships between the child, his family, and his environment.

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References

- Abbott, A. L., & Bartlett, D. J. (2001). Infant motor development and equipment use in the home. *Child: Care, Health and Development*, 27(3), 295–306. <https://doi.org/10.1046/j.1365-2214.2001.00186.x>
- American Academy of Pediatrics. (2001). Committee on Injury and Poison Prevention. Injuries associated with infant walkers. *Pediatrics*, 108(3), 790–792. <https://doi.org/10.1542/peds.108.3.790>
- American Academy of Pediatrics. (2018). Patient education handouts. *Baby walkers: What you need to know*. Retrieved from <https://patiented.solutions.aap.org/handout.aspx?gbosid=156398>
- Arizona Department of Health Services, Bureau of Women and Children's Health. (2019). *Navajo Nation primary care area, statistical profile 2018*. Retrieved from <https://www.azdhs.gov/prevention/womens-childrens-health/reports-fact-sheets/index.php>
- Arizona Rural Policy Institute. (n.d.). *Demographic analysis of the Navajo Nation using 2010 census and 2010 American Community Survey estimates*. Retrieved from https://gotr.azgovernor.gov/sites/default/files/navajo_nation_0.pdf
- Australian Physiotherapy Association. (2007). *Position statement: Baby walkers*. Retrieved from https://www.physiotherapy.asn.au/DocumentsFolder/Advocacy_Position_Baby_Walkers_2007.pdf
- Badihian, S., Badihian, N., & Yaghini, O. (2017). The effect of baby walker on child development: A systematic review. *Iranian Journal of Child Neurology*, 11(4), 1–6.
- Bartlett, D. J., & Fanning, J. E. K. (2003). Relationships of equipment use and play positions to motor development at eight months corrected age of infants born preterm. *Pediatric Physical Therapy*, 15(1), 8–15. <https://doi.org/10.1097/01.PEP.0000051693.49199.41>
- Beeshligai, H. (2018). The cradleboard and child development. *Leading the Way: The Wisdom of the Navajo People*, 16(4), 24–27.

- Begay, S. L. (2018). Developing a Navajo educational media guide: A community perspective (Order No. AAI10288621).
- Benally, H. J. (1994). Navajo philosophy of learning and pedagogy. *Journal of Navajo Education*, 7(1), 23–31.
- Blanchard, K. (1975). Changing sex roles and Protestantism among the Navajo women in Ramah. *Journal of the Scientific Study of Religion*, 14, 43–50. <https://doi.org/10.2307/1384455>
- Bowie, J.L., Brown, C., Clark, D., Sawyer, V., & Worden, H. (2018). *Coconino County community needs assessment report 2017*. Retrieved from <http://www.coconino.az.gov/DocumentCenter/View/7421/Coconino-County-Community-Needs-Assessment-Report-2017>
- Calamity, A. (2011). *Child guidance and classroom management*. Unpublished manuscript.
- Chagas, P. S. C., Mancini, M. C., Tirado, M. G. A., Megale, L., & Sampaio, R. F. (2011). Beliefs about the use of baby walkers. *Revista Brasileira de Fisioterapia*, 15(4), 303–309. <https://doi.org/10.1590/S1413-35552011005000015>
- Chisholm, J. S. (1978). Swaddling, cradleboards and the development of children. *Early Human Development*, 2(3), 255–275. [https://doi.org/10.1016/0378-3782\(78\)90029-4](https://doi.org/10.1016/0378-3782(78)90029-4)
- Chisholm, J. S. (1983). *Navajo infancy: An ethnological study of child development*. Hawthorne, NY: Aldine Publishing Company.
- Clarke, N. M. P. (2014). Swaddling and hip dysplasia: An orthopaedic perspective. *Archives Disability in Childhood*, 99(1), 5–6. <https://doi.org/10.1136/archdischild-2013-304143>
- Claw, S. A. (2018). Diné parenting: Conception to cradleboard. *Leading the Way: The Wisdom of the Navajo People*, 16(12), 10–13.
- Connors, J. L., & Donnellan, A. M. (1998). Walk in beauty: Western perspectives on disability and Navajo family/cultural resilience. In H. I. McCubbom, E. A. Thompson, A. I. Thompson, & J. E. Fromer (Eds.), *Resiliency in Native American and immigrant families* (pp. 159–182). Thousand Oaks, CA: Sage.
- Dennis, W., & Dennis, M. G. (1991). The effect of cradling practices upon the onset of walking in Hopi children. *Journal of Genetic Psychology*, 152(4), 563–572. <https://doi.org/10.1080/00221325.1991.9914713>
- Deyle, D., & LeCompte, M. (1994). Cultural differences in child development: Navajo adolescents in middle schools. *Theory Into Practice*, 33, 156–166. <https://doi.org/10.1080/00405849409543634>
- DiLillo, D., Damashek, A., & Peterson, L. (2001). Maternal use of baby walkers with young children: Recent trends and possible alternatives. *Injury Prevention*, 7(3), 223–227. <https://doi.org/10.1136/ip.7.3.223>
- Frankland, H. C., Turnbull, A. P., Wehmeyer, M. L., & Blackmountain, L. (2004). An explanation of the self-determination construct and disability as it relates to the Dine' (Navajo) culture. *Education and Training in Developmental Disabilities*, 39(3), 191–205.
- Garrett, M., McElroy, A. M., & Staines, A. (2002). Locomotor milestones and babywalkers: Cross sectional study. *British Medical Journal*, 324(7352), 1494. <https://doi.org/10.1136/bmj.324.7352.1494>
- Hossain, Z., & Anziano, M. C. (2008). Mothers' and fathers' involvement with school-aged Children's care and academic activities in Navajo Indian families. *Cultural Diversity and Ethnic Minority Psychology*, 14(2), 109–117. <https://doi.org/10.1037/1099-9809.14.2.109>
- International Hip Dysplasia Institute. (2018). *Swaddling: IHDI position statement*. Retrieved from <https://hipdysplasia.org/news/latest-news/swaddling-ihdi-position-statement/>
- Jett, S. C. (2005). Navajo-modified living trees and cradleboard manufacture. *Material Culture*, 37(1), 131–145.
- Johnson, K. (2018). Using a cradleboard. *Leading the Way: The Wisdom of the Navajo People*, 16(12), 10–13.
- Manolescu, K., & Noble, D. (2005). Cradleboard use today. *Leading the Way: The Wisdom of the Navajo People*, 3(12), 2–5.
- Native-Languages. (2015). *Native languages of the Americas: Native American cradleboards*. Retrieved from <http://www.native-languages.org/cradleboard.htm>

- Navajo Nation Division of Economic Development. (2010). *2009–2010 comprehensive economic development strategy Navajo Nation*. Retrieved from http://www.navajobusiness.com/pdf/CEDS/CED_NN_Final_09_10.pdf
- Norris, T., Vines, P.L., & Hoeffel, E.M. (2012, January). *The American Indian and Alaskan Native Population: 2010*. Retrieved from <https://www.census.gov/prod/cen2010/briefs/c2010br-10.pdf>
- Ogunwole, S. (2006, February). *We the people: American Indians and Alaskan Natives in the United States, Census 2000 Special Reports*. Retrieved from <https://www.census.gov/prod/2006pubs/censr-28.pdf>
- Pin, T., Eldridge, B., & Galea, M. P. (2007). A review of the effects of sleep position, play position, and equipment use on motor development in infants. *Developmental Medicine and Child Neurology*, *49*(11), 858–867. <https://doi.org/10.1111/j.1469-8749.2007.00858.x>
- RPI Consulting. (2011, August). *Phase II housing needs assessment and demographic analysis*. Retrieved from https://www.jonespayne.com/sites/default/files/file-attachments/Plate_IMS_NavajoHousing_052914.pdf
- Schwend, R. M., Pratt, W. B., & Fultz, J. (1999). Untreated acetabular dysplasia of the hip in the Navajo: A 34-year case series follow-up. *Clinical Orthopaedics and Related Research*, *364*, 108–116. <https://doi.org/10.1097/00003086-199907000-00015>
- Shaw, B. A., & Segal, L. S. (2016). Section on orthopedics. Evaluation and referral for developmental dysplasia of the hip in infants. *Pediatrics*, *138*(6), e20163107. <https://doi.org/10.1542/peds.2016-3107>
- Siegel, A. C., & Burton, R. V. (1999). Effects of baby walkers on motor and mental development in human infants. *Journal of Development and Behavioral Pediatrics*, *20*(5), 355–361. <https://doi.org/10.1097/00004703-199910000-00010>
- Simpkiss, M. J., & Raikes, A. S. (1972). Problems resulting from the excessive use of baby-walkers and baby-bouncers. *Lancet*, *1*(7753), 747. [https://doi.org/10.1016/S0140-6736\(72\)90261-9](https://doi.org/10.1016/S0140-6736(72)90261-9)
- Sims, A., Chounthirath, T., Yang, J., Hodges, N. L., & Smith, G. A. (2018). Infant walker-related injuries in the United States. *Pediatrics*, *142*(4), e20174332. <https://doi.org/10.1542/peds.2017-4332>
- Wenger, D. R. (2013). Is there a role for acetabular dysplasia correction in an asymptomatic patient? *Journal of Pediatric Orthopedics*, *33*(1), S8–S12. <https://doi.org/10.1097/BPO.0b013e3182771764>
- Woudstra, K. (2018, April). *Why are baby walkers banned in Canada? The Huffington Post Canada*. Retrieved from https://www.huffingtonpost.ca/2015/11/20/why-are-baby-walkers-banned-in-canada_n_8609678.html

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