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Biocultural perspectives on infant sleep

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Introduction

Within sociocultural anthropology, the anthropology of reproduction has focused on experiences of pregnancy, infertility, and the development and application of new reproductive technologies. The period of postpartum caregiving has largely been overlooked, with infant care and infant sleep in particular receiving little attention.

This is a direct result of the historical fragmentation of birth and infant care in the US and other Western settings (Tomori et al. 2018). In studies of infant care, sleep and feeding are similarly treated separately, further replicating Western pediatric divisions between these two processes, with more attention to infant feeding than infant sleep (see Tomori, Quinn, and Palmquist in this volume). Biological anthropology, in contrast, employs a life course approach to reproduction, rooted in an evolutionary understanding of reproduction and infancy (for an overview, see Kramer, Veile, and Henry in this volume). Research on infant sleep has been a notable niche component of the biological anthropology of infancy, combined with and separate from infant feeding. The complexity of infant sleep, however, requires an integrative approach that crosses the traditional subfield boundaries of anthropology.

Infant sleep research in anthropology has acknowledged that cultural beliefs and ideologies influence how we think about infant sleep, its interrelationship with infant feeding, and its place within infant care as a whole. Work across the two subfields has challenged the fragmented approach to childbirth, infant feeding, and infant sleep and the universality of dominant Western cultural ideologies of infant care that are reflected in biomedical guidance. Biocultural work has challenged cultural assumptions about formula feeding and solitary sleep as the default or norm for infants (Rudzik and Ball 2021) as well as biomedicalized understandings of infant sleep safety. Biological anthropologists have highlighted the inextricable physiological and evolutionary relationship of mother–infant sleep and breastfeeding cross-culturally. Sociocultural anthropologists have used ethnographic and historical evidence to question the necessity of parents “training” their infants to achieve solitary sleep without night-time feeding. Together, this work provides key insight into the biological and evolutionary aspects of infant sleep within the broader context of reproduction and the sociocultural relationships that shape sleep. Ultimately, the anthropological study of infant sleep reorients the conversation around this topic and provides a more holistic perspective of reproduction incorporating the postpartum period.
In this chapter, we first provide an overview of key findings from early and more recent work in biocultural anthropology, followed by a synthesis of ethnographic research. We conclude with our thoughts on how incorporating the study of infant sleep more fully into the anthropology of reproduction can transform how we think about infant sleep more broadly.

**The context for infant sleep: Bedsharing or solitary sleep?**

The early years of infant sleep research in anthropology were dominated by a group of studies of mother–infant breastfeeding dyads conducted by McKenna, Mosko, and colleagues (McKenna et al. 1990, 1993, 1994; Mosko et al. 1993; McKenna and Mosko 1993, 1994). At the time, biomedical knowledge of sleep in healthy human infants was derived exclusively from studies of bottle-fed, solitary-sleeping infants. Building on human evolutionary, ethnographic, cross-species, and psychobiological data, McKenna hypothesized that solitary sleep places the infant in a more physiologically challenging sleep environment by removing it from the regulatory effects of the mother’s body provided by sleep proximity. These early studies of mother–infant dyads, sleeping together and alone, combined simultaneous full polysomnography of the mother and infant, which provides a comprehensive record of the biophysiological changes that occur during sleep, with infra-red video and audio for behavioral observation and analysis.

The studies determined that compared to solitary sleep, infants experienced an increase in light sleep and a reduction in deep sleep when bedsharing, and that this was mirrored by their mothers. When bedsharing, the dyads also experienced more time simultaneously in the same sleep stage or awake condition than when they slept apart. McKenna proposed that solitary-sleeping infants experience increased vulnerability to SIDS because they undergo longer periods of deep sleep with fewer arousals, due to the loss of mutual physiological regulation from mother–infant sleep proximity (McKenna et al. 2007).

In addition to demonstrating the intertwined nature of maternal and infant physiology during bedsharing, McKenna and colleagues also established the impact of shared sleep on breastfeeding behavior. Results from McKenna’s early work also documented for the first time that bedsharing resulted in an increase in the number of night-time breastfeeding sessions (McKenna et al. 1994). Nursing bouts occurred on average approximately every one and a half hours for bedsharing dyads, but only approximately every three hours on average when the same mothers and infants slept separately, revealing a complex interconnection between night-time breastfeeding behavior and mother–infant sleep proximity (Mosko et al. 1997a, 1997b; McKenna and Bernshaw 1995).

Collectively, these early studies demonstrated that sleep contact between women and their infants provides a qualitatively and quantitatively different environment for and experience of sleep than solitary infant sleep, with particular relevance for breastfeeding dyads. They provided foundational evidence that began to challenge Western biomedical assumptions about night-time breastfeeding and infant sleep safety.

**Infant sleep and night-time care**

In the UK, studies developing new lines of infant sleep and night-time care research began in the 1990s inspired by McKenna and Mosko’s early work. Anthropologists began to explore the behavioral ecology of night-time infant care, bringing consideration of parents’ lived experience of night-time parenting into the examination of night-time infant care and sleep practices.

Interviews in the northeast of England revealed the flexibility of infant sleep practices among families in the UK and the commonness of shared sleep. Parents described their sleep arrange-
ments in terms of what they had planned to do, where they felt infants were supposed to sleep or where the infant started the night, whereas their actual practice encompassed variation in sleep location (Ball et al. 1999). Few parents considered themselves to be “bed-sharers,” a term they reserved for families who habitually shared a bed (Ball et al. 1999), though by three months postpartum 70% of infants were sleeping with one or both of their parents at least occasionally (Hooker et al. 2000, 2001; Ball et al. 1999). First-time parents could not imagine themselves sharing a bed with their infants despite just under 50% of UK parents doing so (Blair and Ball 2004), and were covert in their behavior for fear of censure from friends and family members who were, in reality, likely practicing the same subterfuge. Here, biological anthropologists showed that parental perceptions of what was “normal” in infant sleep were strongly shaped by cultural beliefs.

Further research demonstrated that in practice, these cultural assumptions came into conflict with the intertwined biological realities of normal infant sleep and night-time breastfeeding in the postpartum. Many parents found themselves unprepared to live with the change in sleep pattern typically associated with early infancy and turned from breastfeeding to feeding cow’s milk formula due to a perception that formula would encourage early settling and reduce night waking (Ball 2002). In contrast, breastfeeding mothers were more likely to always or frequently sleep with their infants, in order to facilitate night-time breastfeeding, while those who did not breastfeed reported that they bedshared only occasionally or not at all (Ball 2002, 2003, 2006; Ball et al. 2000). These findings solidified anthropological understanding of the intricate interrelationships between mother and infant, physiology and behavior, sleep and feeding.

The integration of a theoretical framework of evolutionary pediatrics was essential to clarify the connection between maternal–infant bedsharing and breastfeeding physiology. Ball’s research group at Durham University explored how mother–infant sleep proximity in the immediate postpartum period affected breastfeeding initiation and duration (Ball et al. 2011, 2006; Tully and Ball 2012). Their first randomized control trial explored how infant sleep location affected infant feed frequency in the immediate postpartum. Women who experienced proximate sleep through the use of a three-sided “side-car” crib attached to the mother’s bed, with no barrier between mother and infant, demonstrated an increased number of night-time feeding attempts during their hospital stay. Frequent infant feeding modulates maternal lactation physiology, leading to an increase in blood levels of the lactation hormone prolactin and earlier onset of full milk production (Neville and Morton 2001). Therefore, when contemporary delivery practices and postnatal hospital environments enforce mother–infant separation at night, even if only through the plastic wall of a standard free-standing bassinet, they interrupt the evolved behavioral and physiological relationship between mother and infant (Ball and Klingaman 2007; Taylor et al. 2015).

Tully and Ball (2012) found that among mothers and infants who experienced c-section birth there was no significant increase in breastfeeding frequency for those assigned to side-car cribs. Video observation showed that in the postpartum, c-section infants were sleepy, had to clear and swallow mucous from their lungs over the course of the first two nights, and consequently were uninterested in feeding (Tully and Ball 2012). Tully and Ball argued that the disruption to the postpartum behavior and physiology of mothers and infants resulting from c-section delivery constituted a challenge that could not be overcome simply by restoring or ensuring postpartum contact.

The biological anthropology of infant sleep in the UK and the US developed the central argument that the evolved and intertwined biology of human mothers and infants underlies and shapes the behavioral ecology and the lived experience of infant sleep and infant feeding.
The understanding of this human evolutionary norm serves as the foundation upon which the recent biological anthropology of infant sleep is built.

The biocultural nexus of parent–infant sleep

Recent cross-cultural biological anthropology research, focused on co-sleeping and the interconnection between infants and their parents, most commonly mothers, has significantly advanced knowledge of how human infants have evolved to sleep and feed.

From an evolutionary perspective, human infants expect to be in close contact with a caregiver—and to be breastfed—throughout the day and night. Physiologically, parental choices about what to feed and where to place an infant have an impact on that infant’s physiology and development. The hormones oxytocin, prolactin, and melatonin are functional components of human milk for infants. In turn, infant sleep and feeding patterns influence parental physiology, modulating mothers’ and fathers’ reproductive and sleep hormone levels, as discussed in the following section.

Circadian development and infant sleep patterns

In recent years, researchers have begun to examine the role of night-time care in determining the pace of infant sleep development from an immature pattern of unconsolidated sleep spread throughout the day and night to a maturing pattern of longer night-time sleep with isolated periods of daytime sleep. Identifying stimuli that influence infant sleep development in different sleep contexts is an emerging research area, where the development of robust methodologies is needed to facilitate cross-cultural study.

The development of infant sleep is in part based on the development of infant circadian rhythms. Cortisol and melatonin are two of the hormones that drive infant sleep consolidation (i.e., the concentration of infant sleep into longer night-time periods), rising and falling in response to light cycles and other external cues. In utero, the fetal circadian rhythm is driven by the maternal circadian rhythm; in the immediate postpartum, the neonatal system is free-running (Mirmiran et al. 2003). The infant’s own (endogenous) circadian rhythms begin to emerge after several weeks of life. Joseph and colleagues examined the circadian rhythms that influence sleeping patterns and sleep consolidation (Joseph et al. 2015). They found that the diurnal rhythms of cortisol and melatonin secretion emerge earliest, followed by body temperature rhythm and activity of clock genes (which generate oscillations of gene expression throughout the day). The emergence of circadian rhythms and the consolidation of sleep have both been linked to sleep ecology and night-time care practices (Joseph et al. 2012).

Biological anthropologists have become interested in the potential for cueing of infant circadian rhythms through hormones in maternal milk. Adult melatonin circadian rhythm shows a peak in the early hours of the morning, with daytime levels that are extremely low (Engler et al. 2012). Human milk shows a clear circadian rhythm of melatonin that parallels the concentration in maternal blood, and the rhythm appears to remain stable through the early postpartum (Illnerova et al. 1993). Therefore, in breastfed infants, breast milk melatonin should provide a stable external signal of time of day when other cues, such as sleep–wake patterns or maternal activity, may be disrupted (Illnerova et al. 1993). As a result, maternal melatonin may serve as a signal for the development of the infant circadian rhythm of melatonin and to promote the consolidation of sleep.

Preliminary support for this idea came from Rudzik et al. who found that among exclusively breastfed infants, the difference between daytime and night-time concentrations of melatonin
was strongly predictive of sleep duration in the first eight weeks postpartum, whereas for exclusively formula-fed infants there was no relationship between sleep and melatonin (Rudzik et al. 2016). The strong relationship between sleep and melatonin among breastfed infants suggests that the maternal melatonin signal, passed through the breast milk, may promote infant sleep prior to the development of the infant’s own melatonin circadian rhythm. Future investigations of melatonin development in infants should take into consideration the biocultural ecology in which infant circadian rhythm develops, as well as the influence of differing infant care models on maternal hormonal signaling.

**Maternal–infant co-sleeping with breastfeeding and hormonal modulation**

The impact of night-time infant care practices on breastfeeding frequency and duration has been the most widely investigated physiological relationship between mothers and infants (see Tomori, Quinn, and Palmquist, this volume). In public health discourse, the frequent accompaniment of breastfeeding with bedsharing has sometimes been characterized as being in conflict with attempts to reduce Sudden Infant Death Syndrome (SIDS) (Fetherston and Leach 2012). Consequently, efforts to promote breastfeeding are often stymied by reluctance to acknowledge bedsharing as a widespread practice.

Biological anthropologists have introduced an evolutionary perspective to this debate. Throughout human evolution, breastfeeding has taken place in a context of maternal–infant proximity. Women’s production of prolactin, which drives milk synthesis, and oxytocin, which causes milk to be expelled from the breast, is driven by a feedback loop dependent on the infant stimulating the breast and removing milk during nursing bouts. With each nursing attempt, prolactin is released from the pituitary. As a result, women who breastfeed more frequently in the early postpartum experience an earlier rise in circulating blood prolactin, triggering an earlier and more vigorous onset of lactogenesis II (copious milk production). (Neville and Morton 2001; Salariya et al. 1978; Tennekoon et al. 1994). Research on the behavioral ecology of sleep has revealed that modern hospital postnatal environments can make it difficult for new mothers to breastfeed frequently, which can substantially affect maternal lactation physiology in the early postpartum (Ball et al. 2006; Ball and Klingaman 2007).

Marasco and Barger have hypothesized that in the immediate postpartum prolactin receptors in the breast proliferate in response to prolactin secretion from the pituitary gland, with increased density of receptors occurring with greater feeding frequency (Marasco and Barger 1999). An increased density of receptors established in the immediate postpartum can influence long-term milk production, since control over breast milk production switches from endocrine (brain) to autocrine (breast) control after the first week postpartum. Therefore, practices that encourage frequent breastfeeding in the early postpartum, with a potential increase in receptors, should contribute to longer breastfeeding duration.

Ball and colleagues have examined whether variations in early postnatal sleep ecology might affect long-term breastfeeding outcomes with 1,200 UK mother–newborn pairs randomized to receive a side-car crib or standalone bassinette for the duration of their postnatal stay, who were followed up for 26 weeks to determine breastfeeding and sleep location outcomes. Although no difference in breastfeeding duration between the two groups was found when examining the complete sample (Ball et al. 2011), analysis of a sub-group of dyads who experienced a vaginal delivery without medical interventions (i.e., epidural, or forceps or vacuum-extraction delivery) found that women randomized to receive barrierless contact with their infant in a side-car crib did show increased breastfeeding duration compared with those randomized to the standalone bassinette condition (Robinson 2014). In dyads
who experienced birth interventions, the side-car condition had no effect on breastfeeding duration. Tully and Ball concluded that the impediments to breastfeeding associated with birth interventions pose greater breastfeeding challenges for mothers and infants than can be overcome by ensuring sleep proximity (Tully and Ball 2018). Mothers from the same study who opted to bedshare with their infants at least occasionally during the first 13 weeks post-partum were twice as likely to breastfeed to six months postpartum as those who did not ever bedshare (Howel and Ball 2013). These results support the conclusion that breastfeeding and bedsharing have co-evolved such that the two behaviors are physiologically intertwined and mutually reinforcing (known as “breastsleeping”; McKenna and Gettler 2016), but that this relationship is compromised when maternal or infant physiology is disrupted as a result of birth interventions.

**Paternal–infant co-sleeping and hormonal modulation**

Though mothers and infants share the tight physiological connection of breastfeeding, fathers’ hormonal profiles are also affected by their parenting and sleep practices. Data from the Cebu longitudinal study demonstrated that fathers had lower testosterone than non-fathers (Gettler et al. 2011). A later study that looked at sleep proximity among fathers in the same community found that fathers who slept on the same surface as their children had significantly lower evening testosterone levels and a greater decline in testosterone through the day compared with those who did not sleep with their children (Gettler et al. 2012). Looking at data collected four years apart, men who had become fathers and did co-sleep showed a significantly greater decrease in their testosterone levels than those who did not, regardless of their baseline levels of testosterone (Gettler et al. 2012). Fathers should be included in future research on the relationship between infant and parental sleep architecture and physiological change in cross-cultural settings (see also Gray, Straftis, and Anderson, this volume).

**Parent–infant conflict and trade-offs**

In the last decade, evolutionary theories related to life history and parent–infant conflict have been used to examine parenting behaviors, such as infant feeding, weaning, and carrying (Tully and Ball 2018; Fouts et al. 2005; Quinlan et al. 2003; Jones and Costa 1987; Sellen 2001; see also Kramer, Veile, and Henry, this volume). These studies propose that we examine parental decisions about infant sleep and infant feeding in light of trade-offs between current reproduction (i.e., health/survival of the current infant), future reproduction (likelihood and potential health of a future infant), and survival (maintenance of maternal energy stores and well-being or functioning).

**Parent–infant intra-genomic conflict**

Haig has proposed that night-time behaviors of infants, including breastfeeding and night-waking, have been selected for in order to maximize maternal investment in the infant, at the expense of the mother and any future offspring (Haig 2014). Building on the work of Blurton-Jones and Costa (Blurton-Jones and Costa 1987), Haig has argued that paternally derived genes in the infant promote night-time wakefulness and breastfeeding, which has the effect of suppressing ovulation and thus lengthening the time between pregnancies. Consequently, sibling competition is reduced, and total maternal investment in the infant increases. However, Haig argues that this suite of infant behaviors is merely a genetically programmed evolutionary hold-
over of a past environment and need not be taken into consideration by clinicians in educating parents about normal infant sleep.

In contrast with Haig’s view, most biological anthropologists who study infant sleep argue that infant night-waking, night-time breastfeeding, and sleep proximity should be understood as the evolutionary norm and vital to infant health and development. Evolved infant expectations for care have not changed with changes in modern human society. The popular expectation that adults should experience one long overnight period of uninterrupted sleep is a historical artifact (Ekirch 2001), while the notion that infants should rapidly develop consolidated sleep stems from an early study of formula-fed infants (Moore and Ucko 1957). A large body of ethnographic data (Barry and Paxson 1971), as well as a recent review of the literature, support the idea that for human infants and juveniles, sleeping close to their parents throughout their childhood and even in adolescence is the likely human evolutionary norm (Hewlett and Roulette 2014).

Most anthropological studies of infant sleep also focused on the first six months of life, a period in which clinicians and anthropologists alike agree that human infants are wholly dependent on mothers or other caregivers for survival (Tully, Stuebe, and Verbiest 2017; Sellen 2016).

**Parent–infant conflict in night-time breastfeeding**

Night-time breastfeeding may be seen through the lens of parent–infant conflict. If night-time breastfeeding is too time-consuming, stressful, or difficult, the costs to the mother or her future children may outweigh the benefits to the current infant. Factors that reduce maternal stress may lower the costs enough to make night-time breastfeeding feasible (Tully and Ball 2018). Tully and Ball explored whether hospital facilitation of close sleep proximity between mothers and infants through the use of side-car cribs supported breastfeeding initiation for women and infants who had experienced c-section delivery by reducing the costs—in terms of pain, stress, motivation, etc.—of night-time feeding (Tully and Ball 2012, 2013a, 2013b). They found that well-known challenges of establishing breastfeeding after c-section outweighed the support provided by the side-car crib. Tully and Ball argue that women who experience a c-section reach their breastfeeding investment threshold, at which they are unwilling to continue to invest in breastfeeding, sooner than women who deliver without birth interventions (Tully and Ball 2012).

**Parent–infant conflict in night-time infant care: Risks and benefits**

Researchers have also used the parent–infant conflict model to understand why and how infants may end up exposed to risky sleep environments during night-time infant care. Volpe (2010) studied variations in night-time infant care practices of adolescent and adult women by examining their behavior in light of differing life-history strategies. When considering parental effort, one of the key trade-offs arises between the parent investing in their own growth and maintenance versus that of their offspring (Mulder 1992; Clutton-Brock 1991). In overnight observations, adult mothers invested more time in breastfeeding and spent more of the infant’s sleep time awake, but they increased infant risk by placing infants to sleep alone in separate rooms and using pillows, loose covers, and soft toys to promote comfort and prolong infant sleep (Volpe et al. 2013). In contrast, adolescent mothers reduced their night-time investment by bedsharing and sleeping when the infant was asleep. They also used strategies like propping up bottles for the infant to self-feed and falling asleep on the sofa with the infant while watching television (Volpe et al. 2013). Overall, the infants were exposed to the same number of risky sleep-related...
behaviors, despite the different strategies that adolescent and adult mothers used to cope with maternal night-time investment.

Applying an evolutionary perspective to studies of infant sleep and night-time care has allowed biological anthropologists to gain critical insight (Hinde 2014; Ball 2013) and revealed that parent and infant needs may conflict, rather than align, in the early postpartum and after. This understanding can lead to solutions to support women who are experiencing challenges with night-time breastfeeding and illuminate reasons behind night-time infant care risks to which infants are exposed.

Toward an ethnography of parent–infant sleep

Early ethnographers, predecessors to the feminist anthropologists who formally established the anthropology of reproduction, offered detailed observations of infancy and infant care practices and used their findings to critique the highly medicalized and regimented infant care practices of the US (Ball et al. 2019). Yet, sociocultural anthropology had only a limited interest in children, and a shift away from cross-cultural comparison after the last large-scale comparative analysis of infant-care practices by Barry and Paxson (1971) further narrowed interest in infant care broadly and infant sleep specifically. Over 30 years later, Alma Gottlieb commented on this lack, asking in her ethnography of the Beng of Côte d’Ivoire, “Where have all the babies gone?” and advocating for detailed consideration of infancy by sociocultural anthropologists (Gottlieb 2004). To date, Gottlieb’s work remains perhaps the most detailed ethnography of infancy in the field.

Throughout her ethnography, Gottlieb repeatedly confronts her own cultural assumptions in the face of the Beng approach to infant care. She notes that there is little regimentation of infant sleep or feeding among the Beng, and in contrast to Western industrialized settings infants do not have a bedtime or a bedtime routine (Ben-Ari 2008). Moreover, Beng mothers are not anxious about infant sleep. During the day mothers and others carry young infants as they proceed with their regular daily activities; infants nod off and awake as the need arises. At night, the cloth wrapper (pagne) that usually holds infants during the day is simply untied and infants breastfeed and fall asleep in proximity to their mothers. Night-time mother–infant co-sleeping is the cultural norm and breastfeeding and infant sleep are intimately intertwined. Mothers do not fully awaken when they breastfeed their infants, and they do not make note of how often or for how long they breastfeed at night. Mothers consider night-waking with breastfeeding a normal, if occasionally annoying, part of infant care, and acknowledge day-to-day and individual variation in infant sleep patterns.

Recent sociocultural work on infant sleep has examined the embodied dimensions of infant care. Diana Tahhan’s (2013) ethnography of the Japanese family has devoted considerable attention to shared sleep, or soine. In Japan, co-sleeping is deemed necessary by men and women alike to ensure physical safety in case of emergencies and to facilitate caregiving, as well as overall well-being. Using a phenomenological theoretical framework, Tahhan explores the sense of safety, security, and reassurance, called aushinkan, that shared sleep produces for parents as well as their children. She delineates the importance of “intimacy through touch” or “skinship” and the concept of “touching at depth,” the inter-embodied experience that emerges as a result of parent–infant co-sleeping and fosters interconnection even once the child moves out of the parental room. Japanese sleep practices reproduce and embody cultural values of closeness between parents and children.

A similar sense of closeness and reassurance is described by Alexeyeff in her ethnography of Cook Islanders (Alexeyeff 2013). Alexeyeff recounts the value of co-sleeping to Cook Islander
mothers as an important source of safety and security. These mothers resist New Zealand public health advice that links co-sleeping with an increased risk of SIDS. This work exemplifies how biomedical guidelines can become tools of neocolonial enforcement of “appropriate” parent–child relations. Exploration of ethnic differences in night-time infant care practices in the UK similarly revealed how immigrant mothers seeking to raise their infants according to the traditions of their culture of origin prioritize these cultural norms in infant sleep practices (Chavez et al. 2016). These studies reveal the importance of considering the cultural significance and experiential dimensions of infant sleep, including in discussions aimed at reducing health risks to infants.

The regimentation of infant sleep in wealthy Western settings and the lack of regimentation in other settings is a major theme throughout the ethnographic literature. Ben Ari (2008) explores the cultural significance and uniqueness of bedtime in middle-class Western settings, while the lack of a bedtime routine elsewhere is noted by nearly every anthropologist in their ethnographic works beyond these settings.

Tomori investigates this regimentation further in her ethnography of night-time infant sleep and breastfeeding (Tomori 2014), which is the only anthropological monograph on this subject with a framework drawn from the anthropology of reproduction. Her multi-year study of American middle-class parents in the Midwest demonstrates the profound dominance of capitalist biomedical regimes in infant care and documents their reproduction. Expectant parents spend considerable time and labor during pregnancy preparing the nursery—a separate room, centered around a crib, where the future infant is expected to sleep independently without contact with their parents (Tomori and Boyer 2019). Soon after birth, however, parents confront the reality that breastfeeding infants fall asleep at the breast, and when put down in the crib, do not stay asleep. They seem to want to be close—a desire that is rarely recognized prior to birth; maintaining closeness becomes necessary to make both breastfeeding and sleep work.

This coordination of breastfeeding and sleep is documented across the ethnographic literature (Gottlieb 2004; Tomori 2014; Tahhan 2008). Yet US medical guidance recommends breastfeeding but frames bedsharing as unsafe, even potentially deadly. As a result, US parents are presented with a serious moral dilemma: Adhere to public health guidance about breastfeeding or to that regarding separate infant sleep. Tomori documents how parents negotiate this dilemma, ultimately bringing their infants into their beds, and delaying expectations that the infant will sleep through the night without breastfeeding—findings that echo earlier biocultural work by Ball and colleagues (Ball et al. 1999; Hooker et al. 2001; Ball 2002, 2003).

Even as breastfeeding parents defy and renegotiate cultural expectations, the paradigm of separation remains dominant and night-time proximity remains stigmatized (Tomori et al. 2016). Moreover, privileged White families who are able to access lactation education and support often co-sleep covertly while Black, Indigenous, Latinx, and other families of color are targeted by public health interventions that discourage shared sleep, regardless of its context. Tomori (2018a) has more recently begun to investigate the historical origins of cultural ideologies that limit parent–child bodily proximity, which are incorporated into biomedical guidance that has spread from Europe and the US to the rest of the world, retracing colonial routes. Biomedicine naturalizes these ethnocentric ideologies, obscures their cultural/historical origins and power dynamics, and frequently carries state authority to intervene in families’ lives.

Together, this ethnographic work deconstructs the Western White middle-class cultural default assumptions of solitary infant sleep that are heavily biologized and emphasizes the cross-cultural centrality of mother–infant proximity. Additionally, ethnographic work illuminates the importance of the social values, relations, and inequities that both shape and are reproduced through sleep practices.
Impacts on policy and practice

Infant sleep research in anthropology has had a major impact on policy and postpartum practice in the US, the UK, and worldwide. In the US, where SIDS had been a focus of so much public concern, research led by McKenna has challenged prevailing culturally embedded medical assumptions about human infant sleep and Sudden Infant Death Syndrome, especially the desirability and safety of solitary sleeping. His work broadened understanding of possible origins and means of reducing SIDS in Western industrialized contexts. The arguments that mother–infant co-sleeping is a central component of the evolved human behavioral repertoire of infancy and, as such, is unlikely to be expunged from contemporary parental practice has served as a counterpoint to US medical recommendations that view co-sleeping solely as a threat to infants. Because outcomes associated with bedsharing depend on the conditions and circumstances within which the bedsharing takes place, research as to whether bedsharing can protect against rather than increase rates of SIDS or suffocation has led ultimately to an understanding of the critical importance of breastfeeding and its functional interconnections to bedsharing (McKenna et al. 2007; Ball et al. 2019; Marinelli et al. 2019; Blair et al. 2020).

The integration of evolutionary medicine approaches to the study of infant sleep and feeding has had a major impact on practice and policy in the UK and globally. Ball’s postnatal ward studies, based on evolutionary hypotheses about mother–infant separation, have encouraged health professionals to question whether mother–infant sleep locations on postnatal wards optimize mother–infant well-being and facilitate breastfeeding initiation (Laurent 2011; Bartick and Smith 2014; Crenshaw 2014; Drever-Smith et al. 2013; Gilbert et al. 2005). This work has been widely cited in recommendations that aim to support the intertwined behavior and biology of mothers and infants in the early postpartum, and remove barriers to the initiation of breastfeeding (Blair et al. 2020; Feldman-Winter et al. 2016; Edwards et al. 2014; Holmes et al. 2013; World Health Organization 2017; UNICEF UK 2013).

Taking a biocultural approach to the complex interweaving of biology and culture in infant sleep has brought new perspectives to the discussion of infant sleep-related risk (Volpe et al. 2013; Ball and Volpe 2013), factors that prevent parents from implementing infant sleep recommendations (Volpe et al. 2013), and responses of marginalized and immigrant communities to safe sleep guidance (Crane and Ball 2016). Women arrive at parenting from diverse life trajectories, which cause them to experience and manage parenting costs in different ways. This research indicates that one-size-fits-all approaches to infant sleep safety are inappropriate and that it is unrealistic to expect that all families will structure their infants’ sleep ecology in a uniform way according to safe sleep guidelines (Volpe and Ball 2015). Public health recommendations must be made sufficiently elastic to allow for the range of contexts and trajectories within which infant care occurs.

One of the most promising directions in the field of infant sleep is to explore how the globalization of Western biomedical guidelines of infant sleep and night-time care is negotiated around the world, especially in settings where shared sleep and breastfeeding are the norm. Such a perspective will enable us to contextualize and de-center sleep guidance that naturalizes dominant White Western concepts of sleep, removes them from the context of other aspects of reproduction, and presents them as human universals.

Conclusion

Within the traditional anthropology of reproduction, the postpartum period has played little role. The focus on pregnancy, fertility, and the new reproductive technologies has served to narrow our understanding of reproduction to focus predominantly on the (expectant) parents, to the exclusion
of the child. This focus recapitulates the separation between mothers and infants arising within the biomedical system of care. Anthropological research on infancy offers a broader interpretation of reproductive work to include postpartum care for the sleep and feeding of infants, and attention to the ways in which parent and infant physiology and behavior are intertwined in early life. The complexity of infant sleep has demanded an integrative approach and has to date been productive in bringing together the biological and sociocultural subfields of anthropology. Such integrative approaches will continue in future to address the power relations and inequities that are inherent in the medicalization of infant sleep. Addressing infant sleep in a holistic manner in the anthropology of reproduction can transform how we think about it. By uniting biocultural and sociocultural perspectives we produce better research, which may in turn lead to more accurate, equitable, and stigma-free public health guidance in support of all families.

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