

Night-time nurturing: an evolutionary perspective on breastfeeding and sleep

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Anthropological perspective ...

- Phylogenetic depth
 - Traits of mothers & infants common to all mammals
 - Traits of mothers & infants shared with closest primate relatives
 - Traits of mothers & infants unique to our evolutionary history
- Cross cultural breadth
 - Adaptations to more recent ancestral environments
 - Historically novel cultural developments in infant care
- Expose tensions between contemporary infant care practices and evolved maternal & infant biology

Environments of Evolutionary Adaptation



- Common mammalian traits: EEA-1
 - Placental mammals, live-born young, postnatal maternal care & lactation



- Traits shared with closest primates relatives: EEA-2
 - Precocial pattern (hair, sight, hearing), low fat high calorie milk, require close contact



- Traits unique to human evolutionary history: EEA-3
 - Secondarily altricial, poor neuromuscular control, brain development, exterogestate – requires mother to maintain contact 24-7.

Cross-cultural & historical comparison



Environments of Recent Cultural Change: 1

Medicalisation of childbirth (a)

- Anaesthesia for labour & delivery (Chloroform, Twilight Sleep, Barbiturates)
- Mothers unconscious & incapacitated
- Babies transferred to nurseries for care & feeding
- Aseptic practices reduce mortality
- Hospital births soar...



Environments of Recent Cultural Change: 1

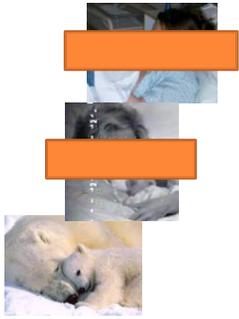
Medicalisation of childbirth (b)

- Psycho-prophylaxis movement
- Narcotic use reduced
- Separation justified due to infection control
- Babies removed to a 'safe place'
- Mothers to rest following delivery
- Meet for scheduled feeds only



Counteracting the impacts

- Delivery room SSC promotes breastfeeding initiation
- Rooming-in on postnatal ward reduces separation
- Sleeping in close contact ameliorates frequent night feeding and later settling
- Sleep contact = mammalian-typical behaviour



Mother-infant sleep contact

- ~50% of all UK infants bed-share by 4 months of age

Over 1st 3-6 months

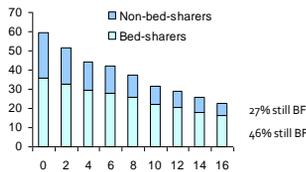
Tuohy et al (1998)	43%	6,268 NZ families interviewed at clinics
Gibson et al (2000)	46%	410 Philadelphia families – questionnaires
Rigda et al (2000)	46%	44 Australian families -- questionnaires
Ball (2002)	47%	253 NE UK families interviews/sleep diaries
Brenner et al (2003)	48%	394 Inner city (DoC) mothers interviewed
Van Sleuwen et al (2003)	40%	210 Dutch families – questionnaires
Willinger et al (2003)	47%	8,453 US caregivers NISPS – telephone survey
Blair & Ball (2004)	46%	1,095 UK CESDI control families – HV interview
Lahr et al (2005)	77%	1,867 US families – Oregon PRAMS surveys
Bolling et al (2007)	49%	12,290 UK mothers -- postal survey

Specified night (in 1st month)

McCoy et al (2004)	22%	10,355 US families -- questionnaires
Blair & Ball (2004)	22%	63 UK CESDI control families – HV interview
Blair & Ball (2004)	21%	261 NE UK families – sleep diaries

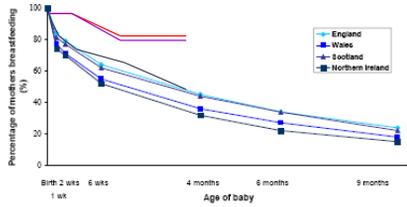
Breastfeeding & bed-sharing

- Strong association between breastfeeding and infant sleep location
 - 70-80% of UK mothers who breastfeed bed-share
 - Facilitates night-time feeding, and helps mothers breastfeed for longer



bed-sharing at 1 month and breastfeeding to 4+ months ($\chi^2=5.45$, $df=1$, $p=0.02$)

Duration of breastfeeding



Night-time nurturing



- The way breastfeeding dyads sleep together is very distinctive, regardless of bed-space
- Mother = lateral, curled up around baby, making 'safe space' for baby with body
- Baby = supine, breast height, away from pillows, oriented towards mother

Physiology of sleep contact

- Babies sleeping in close contact with mothers on average 0.1°C warmer over night than babies sleeping alone – evidence infants might overheat?
 - Babies in sleep contact spend greater % of night in REM sleep
 - Babies warmer in REM sleep and cooler in NREM, regardless of sleep location
 - No difference in temperature when sleep states are compared
- Babies experience more airway covering when in sleep contact – evidence for potential suffocation or re-breathing?
 - Airways frequently covered and uncovered when bed-sharing
 - Movement of bed-partners creates air channels in bedding
 - Neither SatO₂ nor HR were affected by airway covering, regardless of duration
 - No evidence of compression/overlaying

Sleep architecture

- McKenna (1986) hypothesised that infants sleeping in the absence of mother's body were lacking her physiological regulatory influence
- May leave them more vulnerable to breathing control errors when deprived of sensory stimuli which induce arousals (therefore at risk of SIDS)
- Mosko & McKenna documented a greater frequency of infant arousals, and more light and less deep sleep for both mothers and infants when in sleep contact than when sleeping alone.
- Supports the hypothesis that mother's presence is protective
- Many mothers subjectively feel their presence is protective

Hazardous sleep contact?



- Some argue parent-infant sleep contact is a questionable practice that should be abandoned
- Concerns due to risk of SIDS/accidental death
- Accept little or no value to mother-infant sleep contact
- Sofa-sharing and sleep contact with parents who smoke, consume alcohol etc = high risk
- For breastfeeding non smoking mothers the picture is obscured by inconsistent criteria defining bed-sharing and lack of data on feeding type
- Breastfeeding mothers appear to avoid entrapment hazards etc due to protective sleep position – which appears to be instinctive

Sleep contact without breastfeeding

- Sleep contact with a young infant in the absence of breastfeeding is a NICP
- Non-breastfeeding mothers did not create the 'safe space' exhibited by breastfeeding mothers
- Sleep of both bed-partners is different – more deep less, less mutual orientation
- No hormonal feedback system to keep in tune

