



Skin care for healthy babies at term: A systematic review of the evidence

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ABSTRACT

Objectives: to identify what skin practices are important for the protection of baby skin in healthy term babies (0–6 months) and generate evidence-based conclusions to inform health professionals and parents.

Design: eleven databases were searched for all empirical quantitative and qualitative research published between 2000–2015 which explored baby skin care for bathing and cleansing, nappy care, hair and scalp care, management of dry skin or baby massage, for healthy term babies up to 6 months old. Papers not published in English were excluded. A total of 3062 papers were identified. Pairs of reviewers assessed all citations and extracted data independently. There were 26 included papers: 16 RCTs, 3 non-randomised experimental studies, 1 mixed-methods study and 6 qualitative studies. Primary and secondary outcome measures were analysed using meta-analysis or narrative descriptive statistics. Synthesis of qualitative data was not possible due to disparity of the evidence.

Findings: from the small numbers of studies with comparable data, there was no evidence of any significant differences between tested wash products and water or tested baby wipes and water. There was some evidence to suggest that daily use of full-body emollient therapy may help to reduce the risk of atopic eczema in high risk babies with a genetic predisposition to eczema; however, the use of olive oil or sunflower oil for baby dry skin may adversely affect skin barrier function. There was no evidence about hair/scalp care or baby massage. Qualitative research indicates that parents and health professionals believe that water alone is best.

Key conclusions: meta-analysis was restricted due to the lack of consistency of study outcome measures. Although there is considerable RCT evidence comparing the use of specific products against water alone, or another product, for bathing, cleansing and nappy care, the power of this evidence is reduced due to inconsistency of outcome measures in terms of outcome, treatment site or time-point. The development of a core outcome measure set is advocated for trials assessing skin care practices.

Implications for practice: this review offers health professionals best evidence available on which to base their advice. Of those studies with comparative outcomes, the evidence indicates no difference between the specific products tested and water alone; offering parents a choice in their baby skin care regimen.

Protocol available: http://www.crd.york.ac.uk/PROSPEROFILES/28054_PROTOCOL_20151009.pdf

Introduction

Baby skin care is arguably an area of maternity service provision

considered to be of relatively lower priority compared to antenatal and intrapartum care. However, with the rising prevalence of childhood atopic eczema in the United Kingdom and uncertainties amongst

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Table 1
PICO search strategy (Richardson et al., 1995).

Population	infant* OR bab* OR neonat* OR newborn*
Intervention	(skin* OR skin care OR scalp OR cord OR umbilic*) AND (oil* OR therap* OR treatment* OR bath* OR clean* OR nap* OR diaper* OR massag* OR soap* OR wash* OR detergent* OR shampoo* OR wipe* OR product*)
Comparison	(skin* OR skin care OR scalp OR cord OR umbilic*) AND (emollient* OR cream* OR moistur* OR lubricant* OR powder* OR lotion* OR ointment* OR cloth* OR towel* OR sponge* OR cotton wool OR gauze)
Outcome	skin barrier* OR TEWL OR trans epidermal water loss OR stratum corneum hydration OR skin surface hydration OR hydration OR water loss OR skin pH OR erythema OR rash* OR skin ADJ3 score* OR dry skin OR xerosis OR microbio* OR skin development OR vernix OR seborrh?eic

Quantitative Search using (P) AND (I OR C) AND (O).

midwives and parents about effective and safe baby skin care practices, current baby skin care advice given to parents by health professionals may be a contributory factor.

There are structural differences between baby and adult skin. The epidermis in babies is 20% thinner and the stratum corneum is 30% thinner (Stamatas et al., 2010), increasing susceptibility to permeability and dryness. The ratio of baby body surface to body weight is higher than that for adults (Nikolovski et al., 2008), which means that topical agents may have a more intense effect on baby skin. Baby skin also has a propensity to greater trans-epidermal water loss [TEWL] and reduced stratum corneum hydration, reflecting a less effective skin barrier function (Chiou and Blume-Peytavi, 2004; Nakagawa et al., 2004). Babies have a higher skin surface pH (low acidity) which amplifies protease activity and the breakdown of corneodesmosomes, the supportive connective components of the stratum corneum (Cork et al., 2009; Hachem et al., 2003). At birth, baby skin barrier is adequately developed to tolerate extrauterine environment; however, it continues to develop throughout the initial years of life (Fluhr et al., 2011; Stamatas et al., 2011; Nikolovski et al., 2008).

Babies are susceptible to reduced epidermal barrier function. Clinical care and advice should be based on evidence-based recommendations about suitable topical agents which do not adversely alter or affect the skin barrier. This cautionary attitude is necessary in view of the increasing prevalence of childhood atopic eczema (Gupta et al., 2004; Taylor et al., 1984), affecting over 20% of children (Flohr and Mann, 2014). This is not caused solely by genetic predisposition, but may be associated with environmental factors including the use of topically applied natural and/or commercial skin care products (Danby et al., 2013; 2011; Danby and Cork, 2011).

Maternity and child health professionals input into parental practices during a child's early years. Most atopic eczema is diagnosed during the first year (Bieber, 2008), most commonly around six months of age (Wadonda-Kabondo et al., 2003).

Parents have a choice of a wide range of products for baby skin, but there is insufficient evidence-based guidance to employ (Furber et al., 2012; Lavender et al., 2009). As traditional and anecdotal advice may be doing more harm than good, this systematic review was conducted with the aim of identifying the best available evidence to offer parents and health professionals information about optimum safe and effective skin care practices for term, healthy, newborn babies.

Table 2
SPIDER search strategy (Cooke et al., 2012).

Sample	infant* OR bab* OR neonat* OR newborn* OR parent* OR mother* OR father* OR maternal OR paternal
Phenomenon of Interest	(skin* OR skin care OR scalp OR cord OR umbilic* OR dry skin) AND (oil* OR therap* OR treatment* OR bath* OR clean* OR nap* OR diaper* OR massag* OR soap* OR wash* OR detergent* OR shampoo* OR wipe* OR product* OR emollient* OR cream* OR moistur* OR lubricant* OR powder* OR lotion* OR ointment* OR cloth* OR towel* OR sponge* OR cotton wool OR gauze)
Design	questionnaire* OR survey* OR interview* OR focus group* OR case stud* OR observ*
Evaluation	view* OR experience* OR opinion* OR attitude* OR perce* OR belie* OR feel* OR know* OR understand*
Research type	qualitative OR mixed method*

Qualitative Search using [S AND P of I] AND [D OR E OR R]

Methods

The systematic review focused on common aspects of skin care including bathing, cleansing, nappy care, care of the hair/scalp, managing dry skin and baby massage. The age range for the review (birth to six months) was informed by the need to provide evidence to protect the integrity of newborn baby skin and prevent atopic eczema.

Search process

A detailed search strategy was developed (Table 1) and tested using PICO (Richardson et al., 1995). To enhance the retrieval of qualitative papers a further search strategy was developed (Table 2) using SPIDER (Cooke et al., 2012). Appropriate Boolean operators were used to combine keywords. Table 3 provides an example of the full PICO search using Ovid Medline. References were managed in Endnote. A PRISMA flow diagram (Fig. 1) represents the search process (Moher et al., 2009). The systematic three-step search, conducted in November 2015, employed the following databases:

- Cochrane Central Register of Controlled Trials (CENTRAL)
- Medical Literature Analysis and Retrieval System Online: MEDLINE (1946 – November 2015)
- Excerpta Medica Database: EMBASE (1980 – November 2015)
- The Cumulative Index to Nursing and Allied Health Literature: CINAHL (1937 – November 2015)
- ProQuest Dissertation and Theses (1861 – November 2015)
- OpenGrey (1980 – November 2015)
- British Nursing Index (1994 – November 2015)
- Maternity and Infant Care (1971 – November 2015)
- PsycINFO (1806 – November 2015)
- Allied and Complementary Medicine Database: AMED (1985 – November 2015)
- Clinical Trials Registry (www.clinicaltrials.gov)

In addition to the electronic database search the strategy included a citation search of retrieved papers and website exploration for major pharmaceutical and cosmetic companies; and an electronic search of the most topic relevant journals. English-language studies presented in abstract form were included if sufficient data were available or from contact with the study author.

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