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Midwives’ knowledge of newborn feeding ability and reported practice managing the first breastfeed

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ABSTRACT
Continuous uninterrupted skin-to-skin contact is known to facilitate newborn transition to extraterine life, the ability to actively find the nipple and establishment of effective breastfeeding but is not promoted consistently in practice. The Newborn Feeding Ability Questionnaire (NFAQ) was developed to measure midwives’ knowledge and practice in supporting the first breastfeed. The NFAQ was administered to 3,500 midwives in Australia through a mailed survey. A response rate of 31.6% (n=1,105) was achieved and the sample was representative of the national midwifery population for age, sex, education and experience. Mean total score for knowledge was 85.94 (range 40–110 out of 110, SD=10.55) and mean practice score was 95.89 (range 57–117 out of 120, SD=9.19). Knowledge of newborn feeding ability was consistently associated with best practice in managing the first breastfeed. Almost all midwives reported that skin-to-skin contact for newborn infants immediately after birth was important, but few understood the significance of ‘continuous uninterrupted’ skin-to-skin contact to facilitate correct attachment and effective suckling. One-third reported separating mother and baby for routine interventions before allowing the opportunity to demonstrate pre-feeding behaviour or actually breastfeed. Although midwives attempt to ensure the first breastfeed is facilitated soon after birth, the practice of continuous uninterrupted skin-to-skin contact seems poorly understood and not uniformly practised. Further research is needed to investigate how midwives teach mothers’ positioning and attachment for the first breastfeed. Education of midwives so they can optimally facilitate the first breastfeed is required to improve breastfeeding initiation rates.

Key words: first breastfeed, knowledge
INTRODUCTION

Newborn babies possess innate reflexes that enable them to find the nipple, attach correctly and breastfeed effectively, provided they are given the opportunity to remain in skin-to-skin contact with their mother for a sufficient length of time (Anderson et al 2002; Bergman 2001b; Rigard & Alcade 1990; Sinilja & Gagliardi 2001). The first breastfeed refers to breastfeeding initiation after birth. Continuous skin-to-skin contact after birth until the infant actively takes the first breastfeed is a best practice standard (BFHI 1999; 2001; WHO/CHD 1998). Evidence for management of the first breastfeed is unequivocal, particularly in relation to continuous uninterrupted skin-to-skin contact to facilitate newborn adaptation (Anderson et al 2002; Ashmore 2001; BFHI 2001; Christensen et al 1995; Christenson et al 1992; Luddington-Hoe et al 1993; Moran et al 1999; Nissen et al 1995), initiation of feeding behaviours (Panajo-Arvidson et al 2001; Widstrom et al 1987) and effective suckling (Rigard & Alcade 1992; Widstrom & Thingstrom-Paalson 1993; Woolridge 1986). The success of the first breastfeed can positively affect women’s future breastfeeding experiences (Fraser & Cooper 2003; Palmer & Kemp 1996; Royal College of Midwives 2002).

In Australia, midwives are the health professionals most likely to be with women at the time of breastfeeding initiation. It is therefore essential that midwives possess the relevant knowledge and skill to support women to initiate breastfeeding and to observe effective milk removal (Auerbach 2000; Cox & Turnbull 1998; Palmer & Kemp 1996; RCM 2002; Wallace & Marshall 2001; Woolridge 1996). Little attention has been given to midwives’ knowledge of newborn abilities to initiate breastfeeding and relevant support strategies for practice. Of particular interest to the present study is midwives’ knowledge and practice to facilitate “Step 4” of the Baby Friendly Hospital Initiative (BFHI) Ten Steps for Successful Breastfeeding: Help mothers initiate breastfeeding within a half hour of birth.

Assessment of breastfeeding knowledge

Research pertaining to breastfeeding knowledge has been conducted with a range of health professionals including physicians (Freed et al 1995; Scharner, O’Connor & Lawrence 1999) and dietitians (Bagwell et al 1993). The majority of studies, however, have used small samples and focused on maternal-newborn nurses’ knowledge of breastfeeding (Bernaix 2000; Janken et al 1999; Lewinski 1992; Martens 2000; Register et al 2000). One study by Hellings and Howe (2000) included nurse-midwives and assessed breastfeeding knowledge, attitudes and experience. Nurse-midwives were more likely than nurses to report being ‘very effective’ in meeting clients’ needs, but a number of incorrect responses revealed basic knowledge deficits that would adversely affect breastfeeding management decisions. Some authors concluded that midwives’ knowledge was not always superior to that of other health professionals who gained breastfeeding knowledge from personal or ‘on the job’ experience (Karipis & Spicer 1999; Pantazi, Jaeger & Lawson 1998).

Research findings suggest that advice and information given to mothers by some midwives (and other health professionals) is often conflicting and lacks a sound knowledge base (Hales & Wellard 2000; NHS/CRF 2000; Rogers, Emmett & Goling 1997; Schmied, Sheehan & Barclay 2000). While some midwives may be keen observers of newborn behaviour and facilitate newborn innate abilities, others may possess inadequate knowledge (Auerbach 2000), be influenced by the dictates of particular hospital cultures (Ashmore 2001), or follow routine practices that separate babies from their mothers for weighing, measuring, dressing and wrapping immediately after birth (Minchin 1999; Rigard & Alcade 1994). However, if newborn babies’ needs are understood and their innate abilities utilised at the first breastfeed, potential breastfeeding problems may be minimised and initiation rates and client satisfaction improved (Carfoot, Dickson & Williamson 2002; Henderson, Stamp & Pincombe 2001; Rigard 1996).

A high level of breastfeeding knowledge by health professionals has been identified as a predictor of supportive behaviour towards breastfeeding mothers (Bernaix 2000). Several tools have been developed to investigate health professionals’ knowledge of general breastfeeding but reliability and validity have not always been reported. Content is often limited to questions concerning the benefits of human milk and simple decision making on the use of breastmilk substitutes in the management of common breastfeeding situations (Freed et al 1995; Hellings & Howe 2000). Some tools use predominantly open-ended questions (Karipis & Spicer 1999) which require a level of subjectivity in coding and therefore, findings are open to interpretation. Several outdated tools assess a limited range of knowledge (Hellings & Howe 2000; Lewinski 1992, Register et al 2000) or constitute a test (Pantazi, Jaeger & Lawson 1998) which can be threatening to respondents and may inhibit participation.

Unlike previous studies that assessed general knowledge of breastfeeding, this study developed a new tool to investigate midwives’ knowledge of newborn innate feeding ability and reported practice in supporting women with the first breastfeed. This investigation will reveal important baseline data, identify knowledge deficits, inform midwifery education and professional development activities, as well as increase midwives’ awareness of evidence-based research in managing the first breastfeed.

METHOD

Sample

A national sample of midwives was accessed through the Australian College of Midwives Incorporated (ACMI), which has around 3,500 members. Midwives in current clinical practice who interact with women antenatally, during the birth of the baby or in the immediate postnatal period, were invited to participate in the study.

Questionnaire development

The Newborn Feeding Ability Questionnaire (NFAQ) consists of 22 items that require responses on a five-point Likert scale of 1 = strongly disagree to 5 = strongly agree. Items assess knowledge of: 1) benefits of skin-to-skin contact for newborn adaptation, initiation of feeding behaviour, and effects on the mother; 2) factors interfering with newborn feeding ability; 3) practice priorities, interventions, and common routines that may influence management of the first breastfeed; and 4) knowledge related to effective sucking and milk transfer. The NFAQ has a highest possible total score of 110, with higher scores reflecting greater knowledge.

Reported practice was assessed using two case scenarios containing important differences commonly observed in clinical midwifery practice that may result in babies being physically separated from mothers. In the first scenario, ‘Jessica’ had not attended antenatal class, was 36 years of age, and declined routine injections for her baby. She sustained a perianal tear that required
suturing. In the second scenario, 'Chloe' was 20 years of age and had received narcotic analgesia during labour. Her mother, who was present at the birth, requested to know the baby's weight. The two primiparous women planned to breastfeed, had no pregnancy risk factors, experienced uneventful, spontaneous labours and gave birth vaginally to term gestation infants who were vigorous at birth. Twelve identical questions for each scenario were presented.

The first question determined midwives' assessment of the likelihood of each baby attaching correctly to the breast within the first hour of birth and was rated on a five-point Likert scale of 1=unlikely to 5=highly likely. The extent to which midwives facilitated uninterrupted skin-to-skin contact immediately after birth and promoted baby's innate ability to breastfeed, were determined on a scale of 1=never to 5=always. The correct response of 'never' on some items was reversed scored. The total possible practice score was 120 with higher scores reflecting best practice. Missing values were replaced by the mean value to ensure an accurate total practice score (Cohen, Manion & Morrison 2000).

**Expert review and pilot study**

An expert panel comprising six midwives: three International Board Certified Lactation Consultants (IBCLC) (a researcher, an educator, and a lactation consultant in private practice); a pediatrician involved in international research; a lactation consultant/medical scientist; and a lactation consultant/speech therapist reviewed the questionnaire. The panel recommended minor adjustments to wording and structure of some questions for clarity.

Face and content validity were established through the literature review and pilot study. Criterion validity was not assessed because there is no established reliable instrument with which to compare results. The pilot was conducted with a group of 15 registered midwives. Cronbach's alpha and Guttman split half were used to measure reliability. Cronbach's alpha coefficient for internal reliability of the knowledge scale was α=0.67 and reported practice was α=0.81. These findings suggest that the tool had good internal consistency (Cohen, Manion & Morrison 2000).

**Procedure**

The study received Griffith University Human Ethics Committee approval. The questionnaire, information letter and reply paid envelope were inserted in the ACMI quarterly newsletter in October 2001. Strategies to enhance participation, such as reminder notices, were not possible and to overcome anticipated wastage, the covering letter asked recipients to 'pass the questionnaire on to a midwife who would be in a position to help with the research' if they did not wish to participate or did not meet the inclusion criteria of being in current practice.

**Analysis**

Data was analysed using the Statistical Package for the Social Sciences (SPSS) version 10.2 for personal computers. Total scores were derived for knowledge of newborn feeding ability and practice. Descriptive statistics of mean, median, standard deviation and range were used. A multiple hierarchical regression analysis was conducted to find predictors of evidence-based practice. An alpha level of 0.01 was used for all statistical tests to reduce the likelihood of Type 1 error.

**RESULTS**

**Sample characteristics**

A response rate of 31.6% (n=1105) was achieved. The sample was representative of Australian midwives for age, sex and years of experience (Australian Institute of Health and Welfare [AIHW] 1990). The mean age of participants was 41.07 years (23-67 years, SD=6.39). The average length of midwifery experience was 12.74 years (0–40 years, SD 8.38). Around two thirds of respondents or their partner (to allow for male midwives) had breastfed an infant (66%) for at least three months. Most participants (73%) received their original professional midwifery education in hospital-based certificate courses. Some midwives (17.6%) were International Board Certified Lactation Consultants (IBCLC). See Table 1 for sample characteristics.

<table>
<thead>
<tr>
<th>Table 1: Sample characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>20-30</td>
</tr>
<tr>
<td>31-40</td>
</tr>
<tr>
<td>41-50</td>
</tr>
<tr>
<td>51-60</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>Years of experience</td>
</tr>
<tr>
<td>0 (student midwives)</td>
</tr>
<tr>
<td>1 (new graduate midwives)</td>
</tr>
<tr>
<td>2–5</td>
</tr>
<tr>
<td>6–15</td>
</tr>
<tr>
<td>Over 15</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>Midwifery qualification</td>
</tr>
<tr>
<td>Hospital</td>
</tr>
<tr>
<td>University</td>
</tr>
<tr>
<td>Direct entry</td>
</tr>
<tr>
<td>Missing data/Nurse (non-midwife)</td>
</tr>
<tr>
<td>IBCLC accredited</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>Breastfed more than 3 months</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

**Newborn feeding ability**

The first purpose of the study was to determine midwives' knowledge of newborn feeding ability in relation to four specific areas: 1) benefits of skin-to-skin contact; 2) factors interfering with newborn feeding ability; 3) practice priorities influencing management of the first breastfeed and 4) effective sucking (see Table 2). Items were summed to give a total score out of 110. The mean score for knowledge of NFAO was 85.94 (40–110, SD=10.55).
Table 2: Knowledge of newborn feeding ability

<table>
<thead>
<tr>
<th>Benefits of skin-to-skin contact</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Newborn adaptation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevent heat loss</td>
<td>661 (59.8)</td>
<td>409 (37)</td>
<td>18 (1.5)</td>
<td>13 (1.2)</td>
<td>3 (0.3)</td>
</tr>
<tr>
<td>Stabilise breathing</td>
<td>305 (27.8)</td>
<td>406 (36.7)</td>
<td>300 (27.1)</td>
<td>77 (7.0)</td>
<td>14 (1.3)</td>
</tr>
<tr>
<td>Stabilise heart rate</td>
<td>262 (23.7)</td>
<td>437 (39.5)</td>
<td>325 (29.4)</td>
<td>70 (6.3)</td>
<td>11 (1.0)</td>
</tr>
<tr>
<td>Stabilise blood sugar level</td>
<td>175 (15.8)</td>
<td>243 (22.0)</td>
<td>491 (44.4)</td>
<td>166 (15.2)</td>
<td>28 (2.5)</td>
</tr>
<tr>
<td>Acceptance/bonding</td>
<td>428 (38.7)</td>
<td>483 (43.8)</td>
<td>88 (8.0)</td>
<td>99 (9.0)</td>
<td>7 (0.6)</td>
</tr>
<tr>
<td>Helps flow of colostrum</td>
<td>417 (37.7)</td>
<td>484 (43.7)</td>
<td>166 (15)</td>
<td>30 (2.7)</td>
<td>6 (0.5)</td>
</tr>
<tr>
<td>Feeding behaviours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding performance</td>
<td>461 (43.5)</td>
<td>468 (42.4)</td>
<td>94 (8.5)</td>
<td>55 (5)</td>
<td>5 (0.5)</td>
</tr>
<tr>
<td>Feeding behaviour</td>
<td>415 (37.6)</td>
<td>543 (49.1)</td>
<td>76 (6.9)</td>
<td>62 (5.6)</td>
<td>7 (0.6)</td>
</tr>
<tr>
<td>Learn to feed</td>
<td>304 (27.5)</td>
<td>435 (39.3)</td>
<td>239 (21.6)</td>
<td>113 (10.2)</td>
<td>10 (0.9)</td>
</tr>
<tr>
<td>Guided by sense of smell</td>
<td>299 (27.1)</td>
<td>547 (49.5)</td>
<td>207 (18.7)</td>
<td>46 (4.2)</td>
<td>4 (0.4)</td>
</tr>
<tr>
<td>Attach independently to nipple</td>
<td>265 (25.8)</td>
<td>537 (48.6)</td>
<td>134 (12.1)</td>
<td>139 (12.8)</td>
<td>7 (0.6)</td>
</tr>
<tr>
<td>Suckling coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth trauma interfere</td>
<td>342 (31.0)</td>
<td>661 (59.8)</td>
<td>66 (6.0)</td>
<td>30 (2.7)</td>
<td>6 (0.5)</td>
</tr>
<tr>
<td>Separation stress</td>
<td>293 (26.5)</td>
<td>432 (39.1)</td>
<td>201 (18.2)</td>
<td>166 (15.0)</td>
<td>12 (1.1)</td>
</tr>
<tr>
<td>Intarrupt at 15-20 mins</td>
<td>143 (12.9)</td>
<td>328 (30.7)</td>
<td>315 (28.5)</td>
<td>300 (27.1)</td>
<td>18 (1.6)</td>
</tr>
<tr>
<td>Practice priorities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation priority</td>
<td>14 (1.3)</td>
<td>48 (4.3)</td>
<td>38 (3.4)</td>
<td>418 (37.8)</td>
<td>582 (52.7)</td>
</tr>
<tr>
<td>No time for skin-to-skin</td>
<td>24 (2.2)</td>
<td>39 (3.5)</td>
<td>64 (5.8)</td>
<td>416 (37.6)</td>
<td>557 (50.4)</td>
</tr>
<tr>
<td>Wrapping a priority</td>
<td>9 (0.8)</td>
<td>48 (4.3)</td>
<td>43 (3.9)</td>
<td>485 (43.9)</td>
<td>520 (47.1)</td>
</tr>
<tr>
<td>Mothers prefer shower first</td>
<td>9 (0.8)</td>
<td>43 (3.9)</td>
<td>39 (3.5)</td>
<td>561 (50.8)</td>
<td>450 (40.7)</td>
</tr>
<tr>
<td>Know baby is getting colostrum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See baby swallow</td>
<td>120 (10.5)</td>
<td>517 (46.8)</td>
<td>96 (8.7)</td>
<td>311 (28.1)</td>
<td>50 (4.5)</td>
</tr>
<tr>
<td>Hear baby swallow</td>
<td>31 (2.8)</td>
<td>208 (18.8)</td>
<td>104 (9.4)</td>
<td>624 (56.5)</td>
<td>128 (11.6)</td>
</tr>
</tbody>
</table>

There was a declining level of agreement on knowledge related to newborn adaptation to extrauterine life. While most respondents (96.8%) agreed that skin-to-skin contact is important to prevent heat loss in newborns, only a third (37.8%) knew that newborn blood sugar levels can be stabilised by continuous skin-to-skin contact.

A declining level of agreement was also identified on initiation of feeding behaviour. The majority of respondents (85.7%, n=955) agreed that skin-to-skin contact could facilitate the development of predictable coordinated feeding behaviours within minutes of birth and was important for breastfeeding performance (85.9%, n=949). Fewer agreed a newborn is guided to the nipple by their sense of smell (76.6%); has the ability to find the nipple and attach correctly (74.4%) or that skin-to-skin contact can help a newborn learn to breastfeed (66.8%).

Respondents (93.1%) agreed that full-term infants have instinctive reflex abilities to breastfeed effectively but were less certain that babies as young as 32 weeks gestation were capable of sucking (59.2%). Many reported that skin-to-skin contact enhanced mothers' acceptance of their newborn (82.4%) and effected flow of colostrum (81.4%).

Notably around one-half of respondents (57.2%) did not know that interrupting skin-to-skin around 15 to 20 minutes after birth, seriously disturbs the baby's sucking reflexes for correct attachment. Two-thirds of respondents knew that separation at birth could cause harmful stress to the baby (65.6%). Over 90% recognised that birth trauma interferes with the coordination of newborns' instinctive sucking reflexes.

The majority of midwives (88%) reported allowing time for the baby to actively take the first breastfeeding. Wrapping the baby (91%); completing legal documentation (90.5%) or encouraging the mother to shower (91.5%) were reported as a lower priority than skin-to-skin contact for mother and baby after birth.

There was mixed understanding of how to observe transfer of colostrum when suckling during the first breastfeeding (Table 2). Just over half (57.7%) agreed that the baby could be seen swallowing. Fewer midwives (25.1%) agreed that audible swallowing was important to know the baby was getting colostrum.

Reported practice

The second purpose of this study was to determine midwives' management of the first breastfeeding. Responses were similar for both case scenarios except where it was perceived that the baby was affected by narcotic drugs (as in the case of Chloe) (Table 3). The mean practice score was 95.89 out of 120 (57-17; SD=9.19).

While 86.0% reported never routinely suctioning the baby, participants were divided in other responses for routine practices known to separate baby from mother and interfere with newborn feeding ability. Secondly, midwives' reports of how they assist with breastfeeding initiation varied considerably. The most frequently reported best practice was 'never waiting until the woman was showered and in sitting position before offering assistance to breastfeed' (51.1%). Least frequent best practice was 'encouraging women to allow the baby to self attach with minimal assistance' (26.4%).
Table 3: Reported practices by midwives to enhance skin-to-skin contact

<table>
<thead>
<tr>
<th>Facilitate skin-to-skin</th>
<th>Always</th>
<th>Mostly</th>
<th>Sometimes/Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help hold skin-to-skin (Jessica)</td>
<td>704 (63.7)</td>
<td>275 (24.9)</td>
<td>112 (10.2)</td>
<td>9 (0.8)</td>
</tr>
<tr>
<td>Help hold skin-to-skin (Chloe)</td>
<td>611 (55.3)</td>
<td>350 (31.7)</td>
<td>125 (11.3)</td>
<td>12 (1.1)</td>
</tr>
<tr>
<td>Watch feeding behaviour (Jessica)</td>
<td>539 (48.8)</td>
<td>399 (36.1)</td>
<td>135 (12.2)</td>
<td>21 (1.9)</td>
</tr>
<tr>
<td>Watch feeding behaviour (Chloe)</td>
<td>541 (49.0)</td>
<td>398 (36.0)</td>
<td>128 (11.3)</td>
<td>23 (2.1)</td>
</tr>
<tr>
<td>Skin-to-skin, warm towel (Jessica)</td>
<td>431 (39.0)</td>
<td>433 (39.2)</td>
<td>187 (16.9)</td>
<td>44 (4.0)</td>
</tr>
<tr>
<td>Skin-to-skin, warm towel (Chloe)</td>
<td>486 (44.0)</td>
<td>470 (42.5)</td>
<td>129 (11.6)</td>
<td>13 (1.2)</td>
</tr>
<tr>
<td>Routinely suction (Jessica)</td>
<td>2 (0.2)</td>
<td>10 (0.9)</td>
<td>137 (12.4)</td>
<td>951 (85)</td>
</tr>
<tr>
<td>Routinely suction (Chloe)</td>
<td>2 (0.2)</td>
<td>9 (0.8)</td>
<td>154 (14.8)</td>
<td>921 (83.3)</td>
</tr>
<tr>
<td>Heated, assess &amp; weight (Jessica)</td>
<td>2 (0.2)</td>
<td>32 (2.9)</td>
<td>306 (27.9)</td>
<td>759 (66.8)</td>
</tr>
<tr>
<td>Heated, assess &amp; weight (Chloe)</td>
<td>6 (0.5)</td>
<td>37 (3.3)</td>
<td>322 (29.1)</td>
<td>727 (65.5)</td>
</tr>
<tr>
<td>Dry &amp; wrap baby first (Jessica)</td>
<td>13 (1.2)</td>
<td>44 (4.0)</td>
<td>390 (35.3)</td>
<td>651 (58.8)</td>
</tr>
<tr>
<td>Dry &amp; wrap baby first (Chloe)</td>
<td>17 (1.6)</td>
<td>45 (4.1)</td>
<td>427 (39.0)</td>
<td>606 (54.9)</td>
</tr>
</tbody>
</table>

Assessments of knowledge and practice

A multiple hierarchical regression was undertaken to determine associations between midwives’ knowledge of newborn feeding ability and reported practice. Midwives’ knowledge of newborn feeding ability contributed 31.46% of the variation in reported practice and was the best predictor of reported practice (F (1, 1104) = 504.814, β = 0.560, R² = 0.314; p < 0.001).

DISCUSSION

We believe this is the only study to date to investigate midwives’ knowledge of newborn feeding ability and practice to facilitate continuous skin-to-skin care for breastfeeding initiation. The NFAQ is unique in its deeper level assessment of midwives’ breastfeeding knowledge and its focus on practice strengths and deficits. Although self-report surveys have been used by other researchers to measure health professionals’ breastfeeding knowledge, there are limitations associated with an anonymous postal survey. Firstly, a response rate of around 30% is of concern but reasonable (Babbage 1990; Cohen, Marlon & Morrison 2000). In the present study there was a known risk of wastage as reminder notices could not be used, and the inclusion criteria (eg. current practice) may have reduced the number of respondents. Secondly, there is a possibility of response bias. Midwives most interested in breastfeeding may have responded and may differ from non-respondents. However, the sample obtained was representative of the national midwifery population and enhances confidence in the generalisability of results. Finally, the assessment of midwives’ knowledge by questionnaire relies on self-report with no opportunity to observe or validate practice. However, the pattern of results across items seems to indicate that midwives were reporting consistently on their practice.

Results indicate that ‘Step 4’ of the BFHI is not clearly understood or well-practised amongst midwives in Australia. Similar problems have been reported in the USA and UK regarding the implementation of this step (Ashmore 2001; Auerbach 2000). Continuous uninterrupted skin-to-skin contact for initiation of breastfeeding is recommended for optimal physiological stability of infants, effective early breastfeeding, well-being of mothers and coordination of maternal hormonal responses to produce and eject milk (Anderson et al 2003; Feldman & Al 2003; ILCA 1999; Matthiesen et al 2001; Nissen et al 1995; Rentfrew, Lang & Woolridge 2001; Sinusas & Gagliardi 2001; Uvnas-Moberg & Eriksson 1996; WHO,CHD 1999). Our findings suggest a deficit in midwives’ knowledge and the existence of problems in applying theory to practice. Over a third of the sample demonstrated knowledge deficits that would adversely impact on best practice. These findings confirm the results of previous research that suggested not all midwives give sufficient attention to educating women about their baby’s innate abilities and best practices to assist their baby to breastfeed effectively (Cox 2000; Henderson, Pincombe & Kemp 2000; McKellar, Pincombe & Henderson 2002; Rogers, Emmett & Goldberg 1997).

There were key areas of knowledge and practice deficits. Knowledge and practice regarding thermoregulation in the newborn by skin-to-skin contact was inconsistent. Nearly all respondents (97%) knew newborns are kept warm by body contact but fewer reported facilitating skin-to-skin contact after birth. About a third reported they would dry and wrap the baby for warmth, or put the baby under a radiant heater and assess. Only up to 44% reported always keeping the baby in skin contact with the mother and covering with a warm towel to protect from cold after birth. These results suggest that recent evidence-based research is not well-known to many midwives. Some writers suggest traditions and
rituals prevail over research knowledge in the birthing room (Aslam 2000; Auerbach 2000; Earle 2002; O’Callaghan 2001; Richards 2002; Richardson 1996; Richbrid & Alade 1994). Furthermore, knowledge that skin-to-skin contact can facilitate stability of breathing and heart rate during transition to extrauterine life was not sufficiently understood despite consistent evidence (Bergman 2001b; Christenssen et al 1992; Luddington-Hoe et al 1993; Tissier et al 1998). Almost two-thirds of participants did not know that babies kept in close body contact will cry less, use less energy and feed better thus helping to stabilise newborn blood glucose levels (Christenssen et al 1995; Christenssen et al 1992; Dorrough 1998).

Although the majority of midwives reported that full-term infants have instinctive reflex abilities to breastfeed effectively, practical application was not clearly evident. Only half of respondents reported always encouraging the mother to notice babies’ readiness to breastfeed and only a quarter reported always allowing babies time to actively seek the nipple and initiate coordinated sucking.

In general, it has been reported that midwives with low knowledge levels may inadvertently interfere with a baby’s attempts to breastfeed, disrupt innate abilities to breastfeed well, or undermine women’s confidence to hold and manage their baby (Chezenn, Friesen & Boeticher 2003; Couto de Oliveira, Bastos Comacho & Tedstone 2001; Dawson, Gauld & Rider 1993; Etem, Votto & Leventhal 2001; Fletcher & Harris 2000). Simply wrapping a newborn baby can interfere with the stimulation of the hormone oxytocin to improve the flow of colostrum (Matthiesen et al 2001). It is common practice for babies to be wrapped and then handed to the mother or father and this is often depicted as a normal procedure in midwifery textbooks (Bennett & Brown 1999; Lowdermilk, Ferry & Bobak 2001; Olds, London & Ladewig 2000; Sweet 1997) and in the media.

In the practice scenarios, there was no reason to separate mother and infant at any time. Skin-to-skin contact can benefit mothers by promoting oxytocin release (Matthiesen et al 2001; Nissen et al 1995) and engendering positive feelings of acceptance toward their newborn (Ashmore 2001; Klaus, Kennell & Klaus 1995; Tissier et al 1998) but these facts were not known by almost 20% of midwives in this study. The majority of midwives reported helping mothers to hold baby in skin-to-skin contact initially after birth but not always allowing sufficient time for the baby to self-attach. This reported practice is congruent with the identified knowledge deficit reported by up to one-third of the sample who disagreed that skin-to-skin contact can help babies learn to breastfeed.

Forty-five percent of the group reported always actively teaching positioning and attachment for the first breastfeeding. However, the results of a recent randomised control trial concluded that teaching specific positioning and attachment techniques can confuse women and undermine their confidence when they perceive breastfeeding as too technical and difficult (Henderson, Stamp & Pincombe 2001). While positioning and attachment for effective milk removal are important (Braund & Amir 2001; Cox 1995; Renfrew, Woolridge & McGill 2000; Woolridge 1988), more attention is needed on acknowledging what the baby can intrinsically do, and informing mothers of their newborn’s ability to breastfeed (Bergman 2001a; Elflin 2001; Carfoot, Dickson & Williamson 2002; Price 2002; Richardson 1998). Only 50% of midwives reported encouraging mothers to notice baby’s feeding abilities. In both scenarios midwives reported attaching the baby to the nipple by ‘putting the baby on’ the breast for the mother; thus interfering with infant self-attachment. In industrialised societies many mothers do not see other mothers breastfeed and rely on midwives for guidance (Baumslag & Michaels 1995; Flode 1995; Fisher 1985; Palmer & Kemp 1996). It is therefore essential for midwives to possess adequate knowledge and to practice in an evidence-based way (Proctor & Renfrew 2000).

Milk transfer at the first breastfeed is minimal as colostrum is thick and in very small quantity. Participants expressed differences of opinion pertinent to observing milk transfer at the first breastfeed. Effective sucking is defined as deep, rhythmic sucks (ILCA 1999; Richbrid & Alade 1990). Although evidence-based guidelines note audible swallowing as important, some writers point out that deep rhythmic sucking with other signs of comfort for mother and baby are more certain evidence of removal of colostrum (Newman & Fitman 2000). While observation can be subjective, it is important that midwives take time to observe and discuss aspects of the rhythmic suck-swell swallow pattern with mothers (Newman & Fitman 2000; Tobin 1996).

The confirmation of milk transfer when observing a breastfeed remains controversial amongst midwives, despite ILCA guidelines (ILCA 1999) to observe baby sucking for milk transfer. In the present study, one-third of respondents disagreed that midwives and mothers could hear or observe the baby swallowing colostrum. Tools designed to help midwives assess milk transfer place insufficient reliance on research evidence, appear to add further to the inconsistent advice given to breastfeeding mothers, and may actively hinder establishment of breastfeeding (Moran et al 2000). If milk removal is not correctly assessed, women can be at risk of mastitis and engorgement. Furthermore pressure on the cells that secrete milk can trigger nerve responses to slow milk production levels (Hartmann et al 1995) and contribute to women’s perceptions of low milk supply (Birns & Scott 2002; Dykes & Williams 1999). In many cases such problems could be avoided if the first breastfeed were managed in accordance with evidence-based research guidelines (Johnstone 1997; Minchin 1999; NHS.CRD 2000; Renfrew, Woolridge & McGill 2000).

CONCLUSIONS AND RECOMMENDATIONS

This study of a national sample of midwives identified important insights into breastfeeding knowledge and practice. There was poor understanding in several key areas of widely promoted evidence-based research pertaining to management of the newborn baby immediately after birth and in supporting women to initiate breastfeeding. Practices that separate babies from their mothers before giving them the opportunity to demonstrate their ability to breastfeed are prevalent. It is important that midwives are well informed of newborn feeding ability through their professional education and that such knowledge is reinforced through workplace practices. It is imperative that couples be informed about the first breastfeed antenatally and women who plan to breastfeed are supported postnatally. Hospital leaders, administrators, and other hospital departments such as medical records and information technology also need to be informed of best practice guidelines to bring about changes in policies and procedures.

Results of this study suggest midwives need to be encouraged to incorporate evidence-based research into their practice and be supported within their workplace to access research evidence. Comprehensive information on lactation and infant feeding should be offered to midwives—indeed all health professionals, as a major
public health initiative (Gupta 2001; Gupta & Kumar 1998; Jack et al 2001; Radford 2003). Midwives who value the importance of their role in breastfeeding promotion are more likely to keep abreast of advancing knowledge, adequately inform others, protect the newborn's instinctive ability to breastfeed effectively and use evidence-based practice to support women at the first breastfeeding.

Implications of this study are far reaching. Although many midwives understood and reported practice in accordance with evidence-based guidelines for breastfeeding initiation, many did not. A substantial proportion of midwives did not have a sound knowledge base of newborn ability to breastfeed and this impacts on breastfeeding practices. Application of sound knowledge in clinical midwifery practice concerning the first breastfeeding has the potential to reduce costs, prevent some early postnatal breastfeeding problems, and facilitate optimal feeding experiences for mothers and their babies.

Although government health authorities set goals to increase breastfeeding initiation rates and funding is allocated to monitor and implement initiatives to improve breastfeeding rates, insufficient attention has been given to how the first breastfeeding is managed. This is compounded by inadequate education for midwives whose role it is to assist breastfeeding women (Jack et al 2001; Montgomery 2001; Palmer & Kemp 1998; Radford 2003; Sohy et al 1996; Smith & Tully 2001). Midwives have a responsibility to keep their knowledge and skills current (Hall & Hawkins 2000; Proctor & Rentfrew 2000). The present study found that midwives who demonstrate an in-depth understanding of newborn feeding abilities are able to individualise care options and provide evidence-based care. Perhaps the expertise of experienced lactation consultants could be utilized to help midwives develop keen observation skills in this area of advanced knowledge. Jack et al (2001) reported the need for continuing professional education for midwives and other health professionals attending mothers in the postnatal period. They suggested a collaborative educational breastfeeding initiative that emphasized effective interpersonal skills with mothers. Further research is needed to determine the effectiveness of educational interventions to change practice.

Further research is also required to specifically identify knowledge deficits amongst midwives that contribute to conflicting advice reported by women. Key areas for change are required in midwifery practice, content of textbooks, evidence-based content in educational programs, content of materials circulated to the general public as well as media portrayal of breastfeeding.

Finally an intervention study could determine the impact of implementing uninterrupted skin-to-skin contact for the first hour immediately after birth on a range of maternal outcomes such as maternal confidence to hold and feed their babies, incidence of sore nipples, and time required by midwives to manage avoidable breastfeeding problems. Such outcomes potentially impact on midwifery practice, reduce healthcare costs and increase the duration of breastfeeding.

REFERENCES


Fraser D, Cooper L (eds) 1999, Myles Textbook for Midwives (14th ed) Churchill Livingstone London
International Lactation Consultants Association (ILCA) 1999, Evidence-Based Guidelines for Breastfeeding Management During the First Fourteen Days. ILCA, Raleigh, NC.


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**ABA-ALCA Consensus Statement**

The Australian Breastfeeding Association and ALCA are two Australian organisations whose primary focus is breastfeeding. We advocate the importance of breastfeeding and breastmilk to the health and wellbeing of the Australian community.

Our mutual aims are to:

1. empower women to breastfeed successfully
2. protect, promote and support breastfeeding
3. create community awareness of the value of breastfeeding and breastmilk
4. educate and support health workers in breastfeeding knowledge and skills
5. support the International Code of Marketing of Breast-milk Substitutes and the Australian Agreement on the Marketing of Infant Formula
6. encourage high standards of research in lactation.

We recognise the complementary roles each plays and urge all members to work together to achieve these aims.