Abstract

The prevalence of breastfeeding in Scotland is the second lowest in Europe. There is good evidence that breastfeeding results in decreased gastrointestinal, and to a lesser extent respiratory infections, in the first year of life, and reduced serious infections in low-birthweight babies. Published evidence for the effectiveness of interventions which seek to promote successful breastfeeding within populations is scanty and of poor quality, although numerous studies have highlighted hospital practices which discourage and undermine breastfeeding. Changing these poor practices has been shown to be achievable and can lead to improved breastfeeding rates. Experience in other industrialized countries such as Canada, Australia and Norway has shown that substantial increases in breastfeeding are achievable through combined government and health service action over a period of one or two decades. We recommend a combination of government and health service action to promote breastfeeding in Scotland including: implementation of the International Code on Marketing of Breastmilk Substitutes; reviews of health professional basic and in-service training in breastfeeding management, maternity leave and allowances, and workplace facilities for breastfeeding mothers; promotion of the 'Baby Friendly Initiative'; development of community support for breastfeeding mothers; routine collection of breastfeeding data to support annual monitoring of breastfeeding rates; and support for research on the effectiveness of strategies which seek to promote breastfeeding.

Keywords: breastfeeding, health promotion, health policy, disease prevention

Introduction

Like many other features of our society with a bearing on health, breastfeeding is heavily influenced by cultural considerations. Because of this, the incidence and prevalence of breastfeeding have varied over time in our society, and between our society and other societies in Europe and the developing world. In recent years, researchers have shown an increasing interest in the health gain associated with breastfeeding and in the problems arising from bottle feeding, and there has been an ideological shift towards the belief that breastfeeding is beneficial. This is reflected nationally in that increasing the incidence and prevalence of breastfeeding is now a target of the health services in Scotland. The purpose of this paper is to document the epidemiology of breastfeeding in Scotland, briefly review the evidence in its favour, identify proven strategies to promote it and lay out a way forward.

Epidemiology of breastfeeding

It is widely believed that the great majority of babies were breastfed in Britain until the 1930s, although the move from breastfeeding to artificial feeding has been traced to the 1850s and 1860s or even earlier. By the mid-1960s around a third of women in Britain never breastfed and a further quarter stopped breastfeeding in the first month. In Scotland 49 per cent of infants were never breastfed. The variation in practice in different parts of the country, among women of different education and background, and among women of different ages and parity has been the subject of more recent investigation. Although the prevalence of breastfeeding in Scotland has not changed over the last 20 years the prevalence has been lower than for the rest of Britain and has never risen above 50 per cent (Table I).

The percentage of breastfeeding among different countries in Europe varies widely, with rates of over 90 per cent in Sweden, Norway and Poland. Scotland is
TABLE 1 Prevalence of breastfeeding (per cent) at ages up to nine months. Great Britain, Scotland, and England and Wales, 1980, 1985 and 1990

<table>
<thead>
<tr>
<th></th>
<th>Great Britain</th>
<th></th>
<th>Scotland</th>
<th></th>
<th>England and Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>65</td>
<td>64</td>
<td>63</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>1 week</td>
<td>57</td>
<td>55</td>
<td>53</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>2 weeks</td>
<td>52</td>
<td>41</td>
<td>50</td>
<td>41</td>
<td>38</td>
</tr>
<tr>
<td>6 weeks</td>
<td>41</td>
<td>38</td>
<td>39</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>4 months</td>
<td>26</td>
<td>26</td>
<td>25</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>6 months</td>
<td>22</td>
<td>21</td>
<td>21</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>9 months</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

TABLE 2 Incidence of breastfeeding by mother's age (first births only). Great Britain, 1980, 1985 and 1990

<table>
<thead>
<tr>
<th>Mother's age</th>
<th>Initially breastfed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1980</td>
</tr>
<tr>
<td>&lt;20</td>
<td>47</td>
</tr>
<tr>
<td>20–24</td>
<td>69</td>
</tr>
<tr>
<td>25–29</td>
<td>87</td>
</tr>
<tr>
<td>30+</td>
<td>86</td>
</tr>
<tr>
<td>All first babies</td>
<td>74</td>
</tr>
</tbody>
</table>

TABLE 3 Incidence of breastfeeding by age at which mother completed full-time education, Great Britain, 1980, 1985 and 1990

<table>
<thead>
<tr>
<th>Age</th>
<th>Initially breastfed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1980</td>
</tr>
<tr>
<td>16 or under</td>
<td>55</td>
</tr>
<tr>
<td>17 or 18</td>
<td>76</td>
</tr>
<tr>
<td>Over 18</td>
<td>89</td>
</tr>
<tr>
<td>All babies</td>
<td>65</td>
</tr>
</tbody>
</table>

Information about breastfeeding within Scotland is much more scanty. Table 5 shows the proportion of infants breastfeeding at the end of the first week of life in the four major Scottish cities during 1990.

<table>
<thead>
<tr>
<th>Mothers breastfeeding at end of first week (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
</tr>
<tr>
<td>Edinburgh</td>
</tr>
<tr>
<td>Dundee</td>
</tr>
<tr>
<td>Glasgow</td>
</tr>
</tbody>
</table>

Information on feeding arrangements on discharge from maternity hospital is collected on form SMR11 and collated for each Health Board. These data, however, are incomplete for years before 1992 and their quality is unknown. Moreover, they relate to a variable time period after birth and do not include figures for babies admitted to special care baby units. Nevertheless, they do show a relatively low level of breastfeeding throughout Scotland (Table 6).
Laboratory reveal considerable variation among different postcode districts within each Health Board and permit the identification of areas of particularly low breastfeeding incidence. Data collected in 1990, 1991 and 1992 have recently been published and show that the proportion of babies breastfeeding varied from 21 per cent to 59 per cent.

An infant feeding audit co-ordinated by the Scottish Joint Feeding Initiative Co-ordinator has been carried since 1993. All 25 maternity units in Scotland participate and report breastfeeding intentions at booking and breastfeeding practices at delivery, transfer from hospital a mean three days post-partum, six weeks and four months post-partum. Data from this audit are as yet unpublished but have been made available to participating maternity units.

Most women undecided at booking had decided on formula feeding by delivery, and a further move from breast to formula took place between delivery and transfer. The report also found that a small proportion of women who definitely intended to use formula feeding at any stage later changed their minds, whereas nearly one-quarter of those who originally intended to breastfeed were using formula by the time they were transferred.

Evidence for health benefits to infants associated with breastfeeding

*In vitro* studies of the anti-infectious properties of breast milk and clinical studies of the protective effects of breastfeeding against infections in developing countries have provided convincing evidence on the efficacy of breastfeeding in infants. The promotion of breastfeeding in developing countries can make a major contribution to the control of common childhood infections and this is reflected in the current priority given to breastfeeding promotion internationally by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) through the ‘Baby Friendly Hospital’ and other initiatives.

Clinical studies from industrialized countries have produced conflicting results on the protective effects of breastfeeding. The random assignment of breast or formula milk to well infants is unethical, making randomized controlled trials impossible. Published observational cohort or case–control studies have not met important methodological standards and reported results are therefore difficult to interpret or are of uncertain scientific validity.

Although more recent studies present more robust data there are still relatively sparse published data on the observed associations between breastfeeding and health outcomes in infants. Interpretation of these studies must be guarded, as adjustment for known risk factors cannot control for as yet unrecognized confounders or differences in parenting associated with breastfeeding. Nevertheless, there is evidence that breastfeeding results in decreased gastrointestinal, and to a lesser extent respiratory illness (lower respiratory infections and acute otitis media) in the first year of life. In addition, there is evidence for the health benefits of breastfeeding in low-birthweight babies. Breastfeeding may also reduce necrotizing enterocolitis and neonatal infection, this finding has resulted in a revival of interest in the use of breastfeeding in this high-risk group. Studies linking lack of breastfeeding to sudden infant death syndrome require further critical analysis with respect to the effect of possible confounding factors.

Commercial infant formulas with a ratio of linoleic acid to alpha linolenic acid of 10:1 or higher may be nutritionally inadequate, and are associated with lower tissue levels of docosahexanoic acid and reduced visual function in infants who are fed these formulas. Strong observed association between breastfeeding of low-birthweight infants and enhanced neurodevelopment has been reported. This association is biologically plausible, as the fatty acids such as docosahexanoic acid may be essential for neurodevelopment.

Breastfeeding should be maintained for at least 13 weeks for full benefit, and early supplementation seems not to reduce the observed health benefits.

Promotion of breastfeeding

The promotion of breastfeeding can be considered the
cumulative effect of a number of activities from several different disciplines. Two broad aims are the promotion of breastfeeding within the general population, and the promotion of breastfeeding for at least three months by provision of support and encouragement to women who choose to breastfeed.

The first also addresses the issue of women attending antenatal classes who have already decided to bottle feed their baby. Evidence suggests that there is little to be gained by aiming breastfeeding promotion at these women at this stage. They need to be influenced at an earlier stage by the wider approach seeking to inform and influence their cultural group.

The second aim, although acknowledging that opportunities to change the mother's preferred choice of infant feeding are limited after the antenatal period, recognizes that there is considerable scope to influence the subsequent duration of successful breastfeeding. Related to this is the proposal that women who do indicate a desire to breastfeed should be given strong encouragement to do so, should not be discouraged by inappropriate ward routines and should have access to adequate post-natal support at home.

Factors such as lower maternal confidence in ability to breastfeed and less certainty in the decision to breastfeed have been shown to predict failure to breastfeed for more than seven days. Together with the minority of women who are undecided on feeding method during the antenatal period, women in this group can be considered a target group for additional advice and counselling.

It seems likely that the potential for health gain by improving breastfeeding practices will be greatest in the most disadvantaged communities, or at-risk groups such as premature or low-birthweight babies, just as the evidence for the benefits of breastfeeding is stronger in developing than industrialized countries.

Even relatively modest improvements in breastfeeding practices could potentially result in substantial financial savings for both the National Health Service and families, through reductions in hospital admissions and general practitioner consultations in infants for gastrointestinal and lower respiratory infections.

Promotion of breastfeeding within the general population

Health promotion strategies

Published evidence for effective strategies within the United Kingdom to promote breastfeeding in the general population is weak and is characterized by narrowly based, poorly designed studies with lack of common definitions. Randomized controlled trials are difficult to carry out in this area and intervention studies limited. Much of the literature comprises descriptive studies and surveys of knowledge, attitudes and practices.

Although the antenatal period may appear to be an ideal time to influence potential mothers on breastfeeding, about 80 per cent of mothers have already made up their minds about method of infant feeding before the booking visit. Moreover, attendance at antenatal classes, at which infant feeding education might be considered most effectively delivered, has been found to be only about 30 per cent.

There is a paucity of research which has identified specific barriers to breastfeeding and implemented intervention studies to address these. Nevertheless, a European strategy for breastfeeding promotion has been devised. It identifies a number of factors at national and local level, based on Scandinavian experience, which can contribute to an increase in breastfeeding, including an increased availability of practical information on how to deal with breastfeeding problems, mother-to-mother support, adequate maternity leave, changed maternity ward practices, low-profile infant formula marketing, a supportive feminist movement and healthy attitudes about the female body.

With increasing entry of women into the workforce the promotion of breastfeeding often conflicts with the practical imperatives faced by many young mothers. The United Kingdom currently has the shortest period of maternity leave in Europe. Legislation which improves both maternity leave and allowances and revises the milk token scheme, together with work legislation which promotes more flexible working hours for mothers and better crèche and nursery facilities in the workplace is very likely to have a major influence on breastfeeding rates in Scotland.

Experience from Scandinavian countries in the 1970s and 1980s suggests that improvements in breastfeeding practices were due, at least in part, to changes in government legislation which gave greater support to breastfeeding mothers.

Promotion of breastfeeding for at least three months by provision of support and encouragement to women who choose to breastfeed

A randomized controlled trial of a lactation nurse among women who attempted to breastfeed at least once showed consistent, statistically significant increases in the proportion breastfeeding at each point in time between one week and six months in the experimental group, which received support from a
lactation nurse, compared with the control group, which did not. This study also demonstrated a noticeable Hawthorne effect, with increased interest shown by other midwifery staff in breastfeeding mothers and their problems. Because of problems with the design of this study it should be viewed as suggestive rather than definitive.\textsuperscript{34}

The European strategy for breastfeeding promotion has identified five intervention areas, including basic knowledge, attitude and skills of health staff, maternity ward routines, formation of breastfeeding mothers’ support groups, support for employed mothers who want to breastfeed, and commercial pressure on health workers and mothers.\textsuperscript{3,35}

The knowledge, attitudes and skills of health staff
Health staff providing breastfeeding advice to mothers include hospital and community midwives, health visitors and general practitioners. These professionals can give conflicting feeding advice, and the resulting confusion is likely to undermine the confidence of the mother in her ability to breastfeed.\textsuperscript{36,37} Given the reported variation in breastfeeding knowledge and practice it is not surprising that breastfeeding mothers’ most frequent complaint is conflicting advice.\textsuperscript{38}

Nor do paediatric and obstetric medical staff have adequate educational or practical experience to prepare them to be able to give information and advice on breastfeeding to expectant mothers.\textsuperscript{39} Postgraduate education for paediatricians should incorporate comprehensive education on breastfeeding, but the impact of this has not been studied.

Maternity ward routines
The effect of certain hospital practices on breastfeeding behaviour is well documented and widely accepted.\textsuperscript{40–45} There is evidence that the non-verbal modelling provided by routine hospital practices has more influence on breastfeeding outcome than what is actually said to mothers.\textsuperscript{46} A study from Newcastle\textsuperscript{41} highlighted the variance in actual hospital practices from stated policies on breastfeeding. Any process of change in policies and practice should be planned and managed properly, and a number of individual initiatives in this area have been published.\textsuperscript{40,47} These have shown that an educational programme alone without subsequent reinforcement may have little impact in reducing incorrect practices.\textsuperscript{48}

Formation of breastfeeding mothers’ support groups
Providing timely advice and support to breastfeeding mothers is essential for successful breastfeeding. This is becoming even more important with the promotion of DOMINO and other schemes designed to reduce the mean period of maternity hospital stay. If poor community support is associated with the early introduction of formula feeding,\textsuperscript{49} the provision of support and advice at home may result in an increased proportion of mothers breastfeeding for at least three months.

Support for employed mothers who want to breastfeed
Until employers develop maternity policies which do not discourage breastfeeding it will be difficult for most employed women to maintain successful breastfeeding over the first three months of life. However, no intervention studies have been identified which have shown that such policy changes result in improved breastfeeding durations or more satisfying breastfeeding experiences for mothers.

Commercial pressure on health workers and mothers
The WHO code on marketing of breast milk substitutes states\textsuperscript{50} that mothers should be given neither literature which contains advertising nor free samples of formula milk before discharge from hospital. Although endorsed by governments of most industrialized countries this code of practice is not universally implemented.\textsuperscript{51}

Summary of strategies to promote breastfeeding by provision of support to women who choose to breastfeed
There is good evidence for the association between improved breastfeeding outcomes and a number of factors related to maternity hospital practices including demand feeding,\textsuperscript{52–54} rooming-in,\textsuperscript{55–57} no supplementation unless for clear medical indication,\textsuperscript{58,59} no advertising of formula feeding,\textsuperscript{44,60–64} and early and unrestricted mother–baby contact after delivery.\textsuperscript{52,56,65–69} Standardized assessment tools have been produced which evaluate a maternity service’s performance in relation to WHO standards and these are being promoted in the United Kingdom through the ‘Baby Friendly Initiative’.

An important sub-group of women who should be considered separately in relation to breastfeeding promotion are those in whom Human Immunodeficiency Virus type 1 (HIV-1) infection has been detected in breast milk. The risk of transmission through breastfeeding over and above transmission in utero or during delivery has been estimated at 14 per cent.\textsuperscript{70} In 1985, the Centers of Disease Control recommended
that HIV-infected women be advised against breastfeeding,\textsuperscript{71} and this recommendation has been adopted widely by other industrialized countries.

Conclusions

Breastfeeding rates in Scotland

Breastfeeding rates in Scotland are the second lowest in Europe. This is of particular concern as there is good evidence that improved breastfeeding practices would both improve the health of Scottish infants and result in savings to the Scottish health service. Experience in Scandinavia has shown that dramatic increases in breastfeeding rates are achievable through combined government and health service action over a relatively short time period. A national target has now been set: the aim is to have more than 50 per cent of women still breastfeeding their babies at six weeks of life by 2005.

The evidence for health gain

The national and international medical community strongly advocates breastfeeding for the first three to six months of an infant’s life. There is good evidence that breastfeeding results in health gain and in particular reduces the incidence and severity of gastrointestinal and lower respiratory illness in the first year of life, and reduces the incidence of serious infections in preterm babies. The observed associations between breastfeeding and improved neurodevelopment of preterm babies and reduced mortality from sudden infant death syndrome may also prove to be important but require further investigation.

Maternity hospital practices

Numerous published studies have demonstrated that maternity hospital practices are incompatible with WHO recommendations for fully supporting breastfeeding. Bringing routine hospital practices in line with these would result in improved breastfeeding rates in Scotland.\textsuperscript{72} Indeed, this is the aim of the national ‘Baby Friendly Initiative’, which is supported by all the relevant national professional associations.

Linked to improving hospital practices is the need for professional and voluntary groups to work together to support breastfeeding women, particularly when purchasers are aiming to increase the proportion of women who have short postnatal stays both to reduce maternity costs and to respond to the wishes of women. Part of the increased community support that will be required to facilitate this process will be the improved professional and lay support for breastfeeding mothers through improved access to both professional assistance and lay community breastfeeding support groups. A number of models for the provision of this assistance have been proposed, and the most appropriate of these could be selected locally and wholly or partly funded through savings in in-patient direct care costs as the number of postnatal bed days is reduced.

Breastfeeding promotion

Studies to evaluate the impact of public campaigns to promote breastfeeding and those of health education within health and social programmes within Scottish schools are difficult to perform. Few have been reported. Strategies aimed at adolescent mothers have been proposed but not formally assessed.\textsuperscript{73,74}

It is reasonable nevertheless to postulate that these activities are indeed worth while and will result in improved breastfeeding rates in Scotland. Evaluating the effectiveness of any interventions is essential, and individual Health Boards should build in an evaluation of any interventions undertaken in this area.

Government legislation

There are few published data on the effectiveness of changes in government legislation for national breastfeeding practices.\textsuperscript{3} However, a strong case based on experience with advertising in other areas could be made to support the assertion that advertising of infant formulas is detrimental to breastfeeding rates. Government legislation should therefore enforce the international code of practice on advertising by baby milk manufacturers.

With increasing entry of women into the workforce the promotion of breastfeeding often conflicts with the practical imperatives faced by many young mothers. The United Kingdom currently has the shortest period of maternity leave in Europe. Legislation which improves both maternity leave and allowances and revises the milk token scheme, together with work legislation which promotes more flexible working hours for mothers and better creche and nursery facilities in the workplace is very likely to have a major influence on breastfeeding rates in Scotland.

Recommendations for action

A number of recommendations based on the findings of this review are presented below. These are listed in three categories depending on the level of action which is required on a particular issue.

1. National

1.1. Reaffirmation of the Scottish Health Service’s adoption of the International Code on the Marketing of Breastmilk Substitutes.
1. A review of the current level of financial support for national advertising to promote breastfeeding.

2. A commitment to an annual survey of local breastfeeding rates for the next ten years.

3. Adoption of the WHO policy statement Ten steps to successful breastfeeding.


5. Participation in the national ‘Baby Friendly Initiative’ as part of a policy of encouraging audit of maternity services.

6. Participation in the national survey of breastfeeding practices led by the Scottish Joint Breastfeeding Initiative Co-ordinator.

7. A review of breastfeeding sections of in-service training for existing staff and introductory courses for new staff.

8. Support for the establishment of improved community support for breastfeeding mothers through initiatives involving both professional and lay personnel as part of proper discharge planning and support for breastfeeding mothers.

9. Promotion of a strongly positive view of breastfeeding in special care units and with all pre-term and low-birthweight babies.

References


12. Feachem RG, Koblinksy MA. Interventions for the...


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