

A training needs survey of doctors' breastfeeding support skills in England

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Abstract

The study examined the training needs of paediatricians and general practitioners (GPs). Respondents rated their competence on 23 breastfeeding support skills, importance of update in the next 2 years, actual and potential helpfulness of different forms of professional updates, and accessibility in the next 2 years. The perception of organizational barriers to breastfeeding support and practitioners' knowledge of policies and guidance on breastfeeding were also examined. The sample comprised 120 paediatricians and 57 GPs. Response rates were estimated as between 4% and 29%, depending upon the method of recruitment. Although both groups rated themselves as fairly competent in most of the skill areas, they welcomed training in key areas of practice. Paediatricians identified more areas for update than GPs ($t = 3.44$; d.f. = 178; $P < 0.00001$). Those who believed that they were less competent in clinical skills were least likely to seek update ($r = 0.35$; $P < 0.00001$). Practical forms of training were most often welcomed. Only 47% of GPs and 62.5% of paediatricians had access to a local breastfeeding policy. There were evident gaps in knowledge on key aspects of public health policy, which could influence local practice; for example, 50.8% of GPs and 47.5% of paediatricians identified a younger age for introducing solids than the minimum according to current government guidance. Organizational barriers to breastfeeding support were experienced by all respondents. Recommendations include purposively targeting training to those least likely to seek training, and developing effective self-study and observational methods of learning. All training should be evaluated and implemented alongside breastfeeding policies and clinical leadership to improve the practice of all healthcare practitioners.

Keywords: paediatrics, general practice, breastfeeding, infant feeding, training needs, continuing professional development.

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Introduction

Professional groups have different requirements for knowledge and skill in supporting breastfeeding in

post-qualification training. In England, there is no central responsibility for coordinating breastfeeding education and assigning standards for practice, and post-registration education for breastfeeding is not mandatory for any health practitioner group (Smale *et al.* 2006). None of the UK professions require core content on breastfeeding in pre-registration training, even midwives (NMC 2004). In medical training, even at the postgraduate level, the competences are quite generic (RCPCH 2004). Training may include breastfeeding and complementary feeding, but the focus is mainly on physiology, recognizing common breast problems and referral, post-natal recognition of feeding problems and failure to thrive. Health professionals usually learn about breastfeeding within the biomedical model that emphasizes constituents of breastmilk, anatomy and physiology, and health implications of not breastfeeding. The psychosocial approach that recognizes breastfeeding as not only a biological phenomenon, but also a socio-culturally based activity influenced by a range of social, political and economic factors, is not adequately addressed (Smale *et al.* 2006).

Empirical research on the knowledge and attitudes of practitioners in training is of hugely varied standard, and the applicability to the UK is very much constrained by differences in overall training and working practices. However, surveys have shown very large deficits in knowledge of basic concepts underpinning practice, and a range of attitudes often not compatible with adherence to best practice. Freed *et al.* (1995) carried out a large postal survey in the USA of the breastfeeding knowledge of medical practitioners working with breastfeeding women in paediatrics, obstetrics and family practice. More than a quarter disagreed that exclusive breastfeeding is superior nutritionally, and many doubted the validity of the evidence base. Less than half knew the correct breastfeeding management for breast abscess or neonatal jaundice, and less than two-thirds knew the appropriate clinical advice for low milk supply. Most agreed that their training had little or no content on breastfeeding.

Little is known about the training needs of medical practitioners in England, yet many non-medical healthcare practitioners state that the advice they

give mothers can conflict with that given by the mother's general practitioners (GP). A study in the USA by Guise & Freed (2002) revealed that only 5% of resident physicians, irrespective of their specialty (both family medicine and paediatric residents took part in the survey), years of training or gender, knew that breastfeeding infants grow at slower velocity than formula-fed infants after 4 months of age, although the best informed were those who had breastfed themselves. A study in England by Birt (personal communication) showed many areas where GPs felt that breastfeeding advice and care should be provided by other practitioners. The study, again, showed great variability in their assessment of their own training needs. Therefore, it is difficult to predict the training needs of primary care and paediatric staff, yet their competence and attitudes are likely to be very influential for practice and policy.

One important drive to improve the competence and willingness of practitioners to support breastfeeding mothers comes from the government's public health targets for increasing the initiation of breastfeeding in England by two percentage points each year from April 2004, especially for those in disadvantaged groups. Action to promote more skilled support, through improving pre-registration and continuing education, is supported by the European Commission's 'Blueprint for Action' (EU 2004). The training needs survey reported here was commissioned to inform a national learning needs assessment and action plan for learning in England. The work was coordinated overall by the Public Health Collaborating Centre for Maternal and Child Nutrition, and the other elements of the learning needs assessment are reported in other papers in this special issue of the journal (McFadden *et al.* 2006; Renfrew *et al.* 2006).

The following areas related to breastfeeding support were examined:

1. Work-related descriptive variables, i.e. professional group, length of time working with women and their infants who may breastfeed ('Breastfeeding duration experience') and amount of current working time with these women and infants ('Breastfeeding

intensity'). Participants were also asked to agree or disagree with 12 statements regarding their experience with breastfeeding support and attitudes to breastfeeding in the organization;

2. The self-assessed competence of the sample on 23 breastfeeding skill areas;
3. The extent to which the participants believed they would benefit from updating their skills in next 2 years;
4. The types of training preferred (e.g. training mode: practical, didactic, etc.);
5. The organizational barriers to supporting breastfeeding in their workplace; and
6. Their knowledge of public health breastfeeding policy.

Four directional hypotheses were tested:

1. Greater self-assessed competence in breastfeeding skills will be associated with having greater current breastfeeding intensity in their work.
2. More areas for future update will be identified by those practitioners who (a) spend more time currently with breastfeeding mothers and (b) assess themselves as less competent.
3. Greater knowledge of policies and guidance on breastfeeding will be associated with being practitioners who (a) spend more time working with mothers and infants and (b) rate themselves as more competent.
4. More organizational barriers to breastfeeding will be experienced by practitioners who (a) spend more time working with breastfeeding mothers and (b) rate themselves as less competent.

Materials and methods

The self-report questionnaire was developed in consultation with professional bodies, potential participants, and colleagues in the Public Health Collaborating Centre for Maternal and Child Nutrition.

The questionnaire consisted of five sections:

Section 1: Respondents were asked to answer questions related to their current job (organization, position) and experience of supporting breastfeeding. Versions for the two samples (i.e. paediatricians and

GPs) differed only in the discipline specialty categories. Participants were also asked to agree or disagree with 12 statements describing their experience with breastfeeding support and attitudes towards breastfeeding in the organization.

Section 2: A list of eight training activities was presented. Participants were asked (a) to indicate which of the eight forms of training they had experienced (yes/no), (b) to rate their helpfulness on a 3-point scale, (c) and to rate expected helpfulness on a 3-point scale, and (d) to rate accessibility in the next 2 years (yes/no).

Section 3: Participants were asked to tick if they had experienced each of the 12 approaches to learning, and then to rate the helpfulness of that approach on a 3-point scale.

Section 4: Participants were presented with a list of 23 skill areas. Respondents were asked (a) to indicate which skills applied, (b) to self-assess their competence level (not competent, adequate, competent or expert), (c) to indicate whether this skill has importance for update in the next 2 years, and (d) on a 3-point scale to rate how important each skill is for update in the next 2 years.

Section 5: The knowledge of policies and guidance on breastfeeding was examined using four multiple-choice items, where one answer only was correct of five options, and whether they had access or not to a local breastfeeding policy.

Appendix S1, showing analyses performed for scale construction, is available as supplementary material. Please see the end of this paper for details on how to access it.

Procedure

The study was conducted in a period of 2 months between 1 February 2005 and 31 March 2005 as part of a larger study. Each organization was allocated a code to enable identification of the source of data obtained. The requested version of the questionnaire (paper or electronic) was sent to the organization's staff member who had volunteered to distribute the questionnaires among colleagues in the organization. An incentive for distribution was an offer to produce a detailed report of the aggregated results for that

particular organization if more than 10 of its staff responded.

The mailing list included National Health Service (NHS) primary care and maternity services, in London, the West Midlands and Leeds, across both rural and urban centres of population that worked in partnership with the Public Health Collaborating Centre. These lists were supplemented with networks of GPs and a list of members from the Royal College of Paediatrics and Child Health. In all, 1423 paper copies of the general medical questionnaire and 141 copies of the paediatric questionnaire were sent out to these general lists.

Some 43 distributors circulated the electronic version of the questionnaire, but it is unknown what proportion of these contacts had access to medical staff. An additional mailing was made directly to 620 members of the Royal College of Paediatrics and Child Health. The names of consultants working in general paediatrics and neonatology were selected by title and by type of Trust (i.e. Primary Care Trust for child health, and District General Hospital), in order to include practitioners who provided general paediatric care. Half of the sample were randomly given the paper version, and half the electronic version. This was partly to determine which method was more acceptable, and partly to contain costs. The letter included endorsement by the Chair of the Royal College's nutrition committee. In all, 57 GPs (and one public health doctor who was excluded from the analyses) returned completed questionnaires (20 electronic versions and 37 paper copies), giving an estimated 4% response rate based on only direct email and paper distribution, although it is unknown how many distributors passed on the survey to GPs. Paediatricians returned 120 completed questionnaires (30 paper copies and 90 electronic versions). The response rate overall was not possible to determine, but was in the region of 7% for the paper version, and 29% for the electronic version.

Prior to launching the survey, ethics approval was obtained from the NHS Multi-centre Research Ethics Committee, and site registration was achieved for 41 NHS Trusts. Analyses were conducted in the statistical package Statistica, version 6.0 (Statsoft, Oklahoma, USA).

Results

Description of the samples' work-related characteristics

Most of the 57 GPs worked in general practice (71.9%), 14% worked in Primary Care NHS Trusts, and 10.5% in other NHS Trusts. Over half (51.7%) of the 120 paediatricians worked for NHS Trusts other than Primary Care, general practice (26.6%), and 16.7% of paediatricians worked in Primary Care NHS Trusts. GPs had mainly been qualified for over 10 years (77.2%), while paediatricians had mostly been qualified between 5 and 10 years (68.4%). Most of the primary care practitioner participants (86%) described their job title as general practitioner. Most paediatricians currently worked as general or community paediatricians (67.5%), while the remainder worked as subspecialty paediatricians.

Fifty (87.7%) of the GP sample spent some time in their working week directly with mothers and infants, with the modal response being about 25% of the time (57.9% of GPs). As might be expected, the modal response for paediatricians was at least 50% of their time working directly with women, their babies and infants, although 37.5% claimed not to work directly with women and babies.

Tables for the full results of this section are available as Appendix S1. Please see the end of this paper for details on how to access this.

The competence of the sample on 23 breastfeeding skill areas

Almost all GPs regarded the skills as relevant, but while 69.6% felt able to advise on mastitis, only 50.9% felt able to detect abnormal growth and only 33.9% felt competent to advise on prescribing to breastfeeding mothers, i.e. areas for which the GP is likely to be regarded as a significant expert and gatekeeper for specialist referral. There was greater confidence among GPs in the educative skills, except for advising on breast refusal, where only 20.4% felt that they were competent. It should be noted that the competence scale had four response options (other than not applicable). These were 'expert', 'competent', 'adequate' and 'not competent'. The first two

are combined in these tables, giving a threshold level of competence (see Tables 1 and 2).

The paediatricians' results show that all items in the educative scale are relevant to nearly all paediatricians, and all the clinical skills are relevant to at least three-quarters of paediatricians. Of those for whom it was relevant, however, only about half felt competent or expert on the clinical skills, while in contrast with the GPs, only about a third felt competent or expert in the educative skills. Figures for prescribing to breastfeeding mothers, a key medical

practice skill, showed that just 56.8% believed that they were at least competent. Paediatricians' self-assessed competence in detecting abnormal growth, which may result in advice to cease breastfeeding or to supplement with formula milk, showed that only 60.6% believed that they were at least competent. Figures for managing apparent milk insufficiency were that 52.5% believed that they were competent. On advising about engorgement, 30.1% believed they were at least competent, but a similarly large number (33.4%) believed they were not competent. In a basic

Table 1. Self-assessed competence level in clinical skills subscale of breastfeeding support for general practitioners (GPs) and paediatricians (subscale 1 – competent/expert)

Clinical skills Area of breastfeeding support	GPs		Paediatricians	
	Competent/ expert %	No. applicable	Competent/ expert %	No. applicable
Resources to support breastfeeding mothers	75.5	53	47.2	87
Advising about milk insufficiency	73.7	54	52.5	101
Advising about mastitis	69.6	54	48.3	89
Advising about pain management	63.2	53	52.8	106
Breastfeeding by mothers of SCBU babies	52.6	54	55.2	87
Detecting abnormal growth rates	50.9	54	60.6	99
Advising about complementary fluids	45.6	53	61.0	87
Advising about positioning and attachment	39.3	53	59.2	89
When to intervene if baby is not immediately breastfeeding	37.5	53	56.6	88
Prescribing to breastfeeding mothers	33.9	53	56.8	81
Breastfeeding for mothers recovering from Caesarean section	25.9	51	50.5	99

SCBU, Special Care Baby Unit.

Table 2. Self-assessed competence level in educative skills of breastfeeding support of general practitioners (GPs) and paediatric participants (subscale 2 – competent/expert)

Educative skills Area of breastfeeding support	GPs		Paediatricians	
	Competent/ expert %	No. applicable	Competent/ expert %	No. applicable
Encouraging mothers to initiate breastfeeding	82.5	57	31.6	115
Advising about breast and formula feeding	82.1	56	32.6	114
Medical contra-indications to breastfeeding	75.0	56	35.6	114
Breastfeeding as contraception	75.0	56	35.6	114
Understanding physiology of lactation	73.2	53	38.5	114
Advising about thrush infection	64.9	54	35.4	113
Understanding cultural practices on infant feeding	54.4	57	31.3	110
Advising about engorgement	46.4	56	30.1	114
Advising about breast refusal	20.4	54	29.3	114

knowledge area, the physiology of lactation, 38.5% believed that they were at least competent, but 20% believed that they were not competent.

T-tests were conducted to determine whether there were differences between paediatricians ($n = 120$) and GPs ($n = 57$). For the clinical subscale, the result showed that paediatricians assessed themselves as more competent than GPs ($t = 3.65$; $d.f. = 173$ $P = 0.0001$; mean score for paediatricians = 2.95, $SD = 0.78$; mean score for GPs = 2.52, $SD = 0.62$). For the educative skills subscale, which contained items less related to the phase of care, GPs assessed themselves as more competent than paediatricians ($t = -2.62$; $d.f. = 175$; $P = 0.009$; mean score for GPs = 2.69, $SD = 0.55$; mean score for paediatricians = 2.36, $SD = 0.85$).

Hypothesis 1: Greater self-assessed competence in breastfeeding skills will be associated with having greater current breastfeeding intensity in their work.

Both samples were divided into two subgroups: practitioners who spent less than 25% of their time at work on giving direct care to breastfeeding women ($n = 97$) and practitioners who spent more than 25% of their time at work on giving direct care to breastfeeding women ($n = 80$). The result was statistically significant only for the first competence subscale ($t = 4.42$; $d.f. = 178$ $P = 0.01$; less time mean: 3.09, $SD = 0.71$ and more time mean = 2.60; $SD = 0.73$). The results therefore partially confirmed the hypothesis that doctors who spent more than 25% of their time giving direct care to women and their infants assessed themselves as more competent in the clinical subscale than those who had less intensive contact with women and babies, but with no difference for the educative skills scale.

The extent the respondents believe they would benefit from updating their skills in next 2 years

The results confirmed that almost all the areas of breastfeeding support listed in the questionnaire were relevant to the practice of GPs, and were relevant to about four-fifths of paediatricians. However, there are no skills where a clear majority of doctors in either professional group welcomed update. The skills for update most often endorsed by GPs were

'advising about weaning to liquids/solids' (40%), 'understanding the physiology of lactation' (37.7%) and 'breastfeeding for mothers who are recovering from Caesarean section/unwell' (36.4%), and 'managing apparent milk insufficiency' (33.3%). The least endorsed by GPs were 'medical contra-indications for breastfeeding' (21.4%), 'prescribing to breastfeeding mothers' (19.2%) and 'advising about engorgement' (18.2%).

Among the paediatricians, there was little differentiation between the skill areas, ranging from 51.1% who responded that it was important to be updated for 'medical contra-indications to breastfeeding', to 29.3% of the sample regarding it as very important they are updated for 'breastfeeding as contraception'. Therefore, a sizable minority of paediatricians acknowledged that updating in these skills would be useful, although given the levels of competence described above, this may be an underestimate of the proportions who need updating (see Table 3).

Subsample analysis was conducted to determine the difference between GPs and paediatricians in perceived importance for the total scale score for update. Paediatricians, in comparison with GPs, were more likely to believe that it is important to seek update in skills of breastfeeding support in the next 2 years ($t = 3.44$; $d.f. = 178$; $P = 0.0001$; GP mean 2.13, $SD = 0.56$; paediatrician mean = 1.83, $SD = 0.49$).

Hypothesis 2: More areas for future update will be identified by those practitioners who (a) spend more time with breastfeeding mothers and (b) assess themselves as less competent.

The *t*-test results support the hypothesis (a) that practitioners who spent more time in their work giving direct care to breastfeeding women and their infants would identify more areas for update in the future ($t = -4.56$; $d.f. = 178$; $P = 0.0001$; more time mean = 2.24, $SD = 0.44$; less time mean = 1.87, $SD = 0.59$).

The results do not support the related hypothesis (b) that more areas for future update will be identified by those practitioners who assess themselves as less competent. The converse was found for the skills included in the clinical skills subscale 1 (Pearson's $r = 0.35$; $P = 0.0001$), with no significant effect for the educative skills subscale.

Table 3. Importance of skills for future update for general practitioners (GPs) and paediatricians

Area of breastfeeding support	GPs		Paediatricians	
	Very important %	No. applicable	Very important %	No. applicable
Advising about weaning to liquids/solids	40.0	52	50.5	99
Understanding physiology of lactation	37.7	50	42.7	96
Breastfeeding for mothers recovering from Caesarean section	36.4	52	35.1	94
Advising about milk insufficiency	33.3	57	33.3	102
Advising about breast and formula feeding	32.1	53	44.1	102
Advising about breastfeeding for mothers returning to work	32.1	53	51.4	105
Advising about nipple trauma	31.6	54	38.0	100
Advising about mastitis	31.6	54	33.6	104
Breastfeeding as contraception	31.6	54	29.3	99
Detecting abnormal growth rates	31.6	54	38.3	99
Advising about breast refusal	29.8	54	33.7	89
Encouraging mothers to initiate breastfeeding	29.8	54	45.8	83
Advising about complementary fluids	29.6	51	44.4	99
When to intervene if baby is not immediately breastfeeding	29.2	48	45.0	91
Resources to support breastfeeding mothers	29.1	52	42.3	104
Advising about positioning and attachment	28.3	50	41.6	101
Advising about thrush infection	28.1	54	42.4	99
Advising about pain management	28.1	54	36.5	104
Understanding cultural practices on infant feeding	26.8	53	30.4	102
Breastfeeding by mothers of SCBU babies	24.1	51	49.0	99
Medical contra-indications to breastfeeding	21.4	56	51.1	94
Prescribing to breastfeeding mothers	19.2	49	41.3	104
Advising about engorgement	18.2	52	44.8	96

SCBU, Special Care Baby Unit.

Table 4. Helpfulness of different forms of training for general practitioners (GPs) and paediatricians experienced (excluding 'does not apply/not experienced')

Training activities	GPs		Paediatricians	
	Helpful %	No. applicable	Helpful %	No. applicable
Observation of mothers/practitioners	68.6	51	53.8	65
Self-study	67.9	53	54.8	73
Skill-based courses/workshops	29.1	55	44.2	77
Using self-study workbooks/training pack	25.9	54	68.3	82
Royal College training courses	21.2	52	48.9	47
Local practice or Trust-based training	18.5	54	9.3	94
Others	17.8	56	26.8	56
Formal university-based nutrition modules	14.9	47	71.5	70

Rated helpfulness of different forms of professional training received

Table 4 shows the helpfulness of different forms of professional training as rated by paediatricians and GPs.

General practitioners rated observation of skilled practitioners or mothers as most helpful (68.6%), along with self-study (67.9%), with few GPs rating as helpful almost all other options (15–30%); for example, attending Royal College training courses was rated as helpful by only 21.2% of the GPs, and attend-

ing university-based nutrition modules by only 14.9%, and somewhat fewer GPs had experienced this type of training.

In contrast, the form of training that was most helpful to paediatricians was formal university-based nutrition modules (71.5%), although again, not so many ($n = 70$) had experienced this type of training. The second most frequently endorsed option was using self-study workbooks and training packs (68.3%). Self-study and observing mothers and other practitioners were described as helpful by over half of respondents who had experienced them, and almost half found Royal College training courses and skills-based courses and workshops helpful. The least helpful form of training was Trust-based training, which only 9.3% found helpful, although it was also the most frequently experienced for paediatricians ($n = 94$).

Chi-squared analyses showed significant associations between GPs and paediatricians for the helpfulness of five forms of professional training. GPs more often rated 'local practice and Trust-based training' as helpful ($\chi^2 = 18.63$; d.f. = 2; $P = 0.0001$). Paediatricians were more likely to rate 'skill-based courses/workshops' as helpful ($\chi^2 = 17.40$; d.f. = 2; $P = 0.0001$). Similarly, paediatricians more often rated 'using self-study workbook/training pack' as helpful ($\chi^2 = 31.16$; d.f. = 2; $P = 0.0001$), and 'university-based nutrition modules' ($\chi^2 = 42.90$; d.f. = 2; $P = 0.0001$), and 'Royal College training courses' ($\chi^2 = 15.93$; d.f. = 2; $P = 0.0001$).

Expected training access

Table 5 shows that 87.7% of all GPs expected to undertake 'other' training, 59.7% locally organized workshops, and 45.6% self-study, with fewer endorsing other options. The training that paediatricians most often expected to undertake was observations of mothers and other practitioners (71.7%). Some 68.3% of paediatricians stated that they would expect to be using self-study workbooks and training packs in next 2 years. Many paediatricians reported expecting to be able to attend either formal university-based nutrition modules (63.5%) or Royal College training courses (65%). Slightly fewer (49.1%) expected to attend skill-based courses/workshops, or local prac-

Table 5. Training activities expected to be undertaken in next 2 years by general practitioners (GPs) and paediatricians (based on whole sample)

Form of training	% will be able to undertake	
	GPs	Paediatricians
Other	87.7	44.1
Local practice or Trust-based training	59.7	47.5
Self-study	45.6	45.9
Using self-study workbooks/training packs	42.1	68.3
Skill-based courses/workshops	40.3	49.1
University-based nutrition modules	33.3	63.5
Royal College training courses	33.3	65.0
Observations of mothers/practitioners	33.3	71.7

Table 6. Helpfulness of training activities in next 2 years ('would be helpful' responses) for general practitioners (GPs) and paediatricians (whole sample)

Form of training	% would be helpful	
	GPs	Paediatricians
Other (e.g. own experience)	75.4	33.3
Royal College training courses	61.4	34.2
Formal university-based nutrition modules	59.7	30.0
Using self-study workbooks/training packs	33.3	47.5
Observations of mothers/practitioners	33.3	36.7
Local practice or Trust-based training	33.3	25.0
Self-study	32.3	53.3
Skill-based courses/workshops	29.8	26.5

tice or Trust-based training (47.5%), self-study (45.9%) or undertake other forms of training not listed in the questionnaire (44.1%).

To assess the extent to which respondents believed they were likely to receive some formal breastfeeding update, the difference between GPs and paediatricians was tested on the Expected Training Access scale. Paediatricians expected to have much more access to more forms of professional training in comparison with GPs ($t = 2.39$; d.f. = 175; $P = 0.01$; GP mean = 4.55, SD = 1.92; paediatrician mean = 3.75, SD = 2.33).

Helpfulness of training activities in next 2 years

As shown in Table 6, GPs most often favoured 'other training' (75.4%), which from analysis of free text was

found to include providing their own experience, observation of mothers and self-study workbooks. The second most frequent choices were Royal College courses (61.4%), and university-based nutrition modules (59.4%). Only about a third endorsed locally based training, skills workshops or self-study. The most helpful form of professional training for paediatricians was self-study (53.3%). The second most helpful form of training was using self-study workbooks and training packs (47.5%). About a third of paediatricians endorsed as potentially helpful 'observing mothers and other practitioners', Royal College training courses, other forms of professional training not listed in the questionnaire and formal university-based nutrition modules. The least popular were local Trust-based training and skill-based workshops (see Table 6).

Paediatricians more often than GPs rated as helpful 'self-studying' (using journals, publications) ($\chi^2 = 45.24$; d.f. = 2; $P = 0.0001$); 'using workbooks and training packs' ($\chi^2 = 11.04$; d.f. = 2; $P = 0.02$), and 'observation of mothers and other practitioners' ($\chi^2 = 1.55$; d.f. = 2; $P = 0.01$), 'university-based nutrition modules' ($\chi^2 = 13.46$; d.f. = 2; $P = 0.01$) and 'Royal College training courses' ($\chi^2 = 12.28$; d.f. = 2; $P = 0.002$). GPs more often than paediatricians rated as helpful 'other forms of training' not listed in the questionnaire ($\chi^2 = 39.92$; d.f. = 2; $P = 0.0001$).

Helpfulness of approaches to learning

The results in Table 7 show that a large number of the options had not been experienced by over a third of the sample, and in many cases it was more than half, so responses are given in this section for those who reported prior experience. GPs rated as most useful 'practical observation', 'personal study', and informal skill development, and 'learning from skilled practitioners/mothers', whereas more formal local training events, uni- or multidisciplinary events, national events and other options were the least useful.

For paediatricians, the most helpful way of learning was attending 'events delivered by local practitioners' (59.7%), 'personal study' (50%) and attending 'events led by national programme personnel' (49.1%), but only 51 (42.5%) had experienced the second option. This suggests that many paediatricians were not able to access their preferred mode of training, but were prepared to use self-study as an alternative. Similar proportions of paediatricians found 'formal skill development' (47.1%) and 'learning from trained services users' (46.2%) to be helpful ways of learning, and they were mostly able to access these. Slightly fewer paediatricians described as helpful 'practical observations', 'practical skills workshops', 'multidisciplinary events' and 'informal skills

Table 7. Helpfulness of different approaches to learning for general practitioners (GPs) and paediatricians (based on those with prior experience)

Approaches to learning	GPs		Paediatricians	
	Helpful %	No. experienced	Helpful %	No. experienced
Practical observations	66.7	45	44.8	107
Personal study	64.7	51	50.0	118
Informal skills development through colleagues	59.2	49	43.5	108
Learning from trained service users	53.6	41	46.2	119
Formal skill development	51.3	37	47.1	104
Events delivered by local practitioners	50.0	32	59.7	62
Events led by national programme personnel	36.7	30	49.1	51
Multidisciplinary events	36.1	36	42.8	112
Being mentored	34.5	29	38.1	97
Practical skills workshops	34.3	35	43.7	112
Uni-disciplinary events	27.3	33	17.8	112
Other	12.5	48	21.2	80

development through colleagues'. Being mentored was considered helpful by 38.1%, while 19.2% had not experienced this.

Subsample analyses by professional group showed only one significant difference, for 'practical observations' ($\chi^2 = 6.46$; d.f. = 2; $P = 0.03$), where GPs more often rated this as a helpful form of professional training.

Knowledge of policies and guidance on breastfeeding

Only 49% of the GP sample had access to a local breastfeeding policy. Table 8 shows the percentages of correct answers on four multiple-choice health policy items. On some items, such as government targets for initiation, only 10.5% gave the correct answer,

Table 8. Knowledge of policies and guidance on (italic: correct response)

	GPs		Paediatricians	
	<i>n</i>	%	<i>n</i>	%
Can you identify the government target for breastfeeding?				
Increase the number of mothers exclusively breastfeeding at 4 months	11	19.3	25	20.8
Increase the number of mothers who start to breastfeed by 1% per year	4	7.0	24	20.0
Increase the number of mothers who start to breastfeed by 2% per year (CORRECT)	6	10.5	40	33.3
Increase the number of mothers who start to breastfeed by locally set targets	4	7.0	11	9.2
Don't know	32	56.2	20	16.7
For how long does WHO suggest mothers should exclusively breastfeed their babies?				
As long as they can	8	14.0	23	19.2
For 6 weeks	3	5.3	16	13.3
For 4 months	10	17.5	46	38.3
For 6 months (CORRECT)	19	33.3	29	24.2
For one year	5	8.8	2	1.7
Don't know	12	21.1	4	3.3
What is the youngest age at which current government guidance suggest solid foods are introduced?				
3 months	4	7.0	21	17.5
4 months	25	43.8	36	30.0
6 months (CORRECT)	17	29.8	52	43.3
8 months	5	8.8	10	8.4
When baby appears ready for solids	1	1.8	0	0
Don't know	5	8.8	1	0.8
What is the current national rate of initiation of breastfeeding in England?				
50% mothers begin to breastfeed	13	22.8	28	23.3
60% mothers begin to breastfeed	15	26.3	35	29.2
70% mothers begin to breastfeed (CORRECT) *	8	14.0	46	38.3
80% mothers begin to breastfeed	0	0	9	7.5
Don't know	21	36.9	2	1.7

*Hamlyn *et al.* (2002). The 'headline' figure is 70%, although technical adjustments mean that it can be interpreted as 62%, but the most widely known figure is 70%. GP, general practitioner; WHO, World Health Organization.

and over half (56.2%) stated that they did not know. Acknowledged lack of knowledge is unlikely to lead to immediate problems in practice. But on items such as the current recommended age to introduce solids, which has immediate relevance and a known evidence base of the risks of introduction of solids too early, only 8.8% said that they did not know and 50.8% picked answers with options earlier than current guidance.

Among paediatricians, 75 (62.5%) had access to a local policy on breastfeeding. On the knowledge test items, 43.3% knew the correct age to introduce solids, 33.3% correctly identified government breastfeeding targets and 38.3% the current national breastfeeding rates, and 24.2% identified the correct figures for World Health Organization (WHO) guidance in relation to the recommended duration of exclusive breastfeeding. It is perhaps more worrying that the numbers incorrect on the two clinically important items were so high. Worse still, the rates on 'do not know' are very small, suggesting factually incorrect beliefs. Some 47.5% of paediatricians believed that it was government policy to advise intake of solids at 4 months or below, and 57.5% believed that exclusive breastfeeding was only advised for 4 months or less.

The knowledge scale scores were used to examine the differences between GPs' and paediatricians' levels of knowledge of policies and guidance on breastfeeding ($t = 2.10$; d.f. = 175; $P = 0.03$; paediatrician mean = 2.77, SD = 1.21; GP mean = 2.38, SD = 0.97), and showed that paediatricians had overall more

accurate knowledge of policies and guidance on breastfeeding.

Hypothesis 3: Greater knowledge of policies and guidance on breastfeeding will be associated with being practitioners who (a) spend more time working with mothers and infants and (b) rate themselves as more competent.

T-test was used on the subscale score of knowledge of policy from the combined samples of GPs and paediatricians by the variable intensity of current breastfeeding: less time = 0–25% of the working week ($n = 97$) and more time = more than 25% of the working week ($n = 80$). There was no significant association with knowledge of policy scores. The related hypothesis that greater knowledge of policies and guidance of breastfeeding was related to higher level of self-assessed competence in breastfeeding support skills was confirmed in regard to both the clinical subscale (Pearson's $r = 0.29$; $P = 0.0001$) and the educative skills subscale (Pearson's $r = 0.15$; $P = 0.04$).

Organizational barriers to breastfeeding support

Table 9 shows the barriers experienced by doctors.

The results show that some GPs were particularly likely to experience problems related to guidelines. Over half (57.9%) of GPs stated that staff in their organization did not adhere to the guidelines for breastfeeding, 54.5% had no access to guidelines in their workplace and 43.8% reported that staff used different approaches leading to conflicting advice,

Table 9. Organizational barriers for breastfeeding support

Organizational barriers	GPs		Paediatricians	
	<i>n</i>	%	<i>n</i>	%
Staff's different approaches to breastfeeding lead to conflicting advice	31	54.4	51	42.5
It's difficult to recommend breastfeeding to mothers who have many other problems	18	31.6	91	75.8
Staffing levels are too low to provide mothers with enough support	22	38.6	47	39.2
Guidelines for staff regarding breastfeeding are difficult to follow in practice	24	42.1	77	64.2
There are no guidelines for staff practice regarding breastfeeding in my workplace	31	54.4	57	47.5
Some staff do not adhere to guidelines for breastfeeding	33	57.9	44	36.7
Mothers are given conflicting advice about breastfeeding in my workplace	25	43.8	73	60.8
Mothers go home too early to provide adequate support	27	47.4	82	63.3
The facilities/accommodation we provide are not helpful to breastfeeding women	17	29.8	62	51.7

GP, general practitioner.

while 42.1% found guidelines difficult to follow in their own practice. Nearly a third (29.8%) admitted that their facilities were not supportive to breastfeeding mothers.

Most paediatricians (75.8%) had problems with recommending breastfeeding to mothers who had many other problems. Some 64.2% found that guidelines for staff regarding breastfeeding were difficult to follow in practice. Almost half (47.5%) admitted that they did not have access to practice guidelines for staff in their workplace, and perhaps unsurprisingly, 42.5% reported that staff's different approaches to breastfeeding led to conflicting advice for mothers. Over half (51.7%) of paediatricians believed that facilities and accommodation provided by their organization were not helpful to breastfeeding women.

Paediatricians reported more organizational barriers to breastfeeding support in their workplace than GPs ($t = 2.45$; $d.f. = 175$; $P = 0.01$; paediatrician mean = 4.86, $SD = 2.19$; GP mean = 4.00, $SD = 1.18$), which may relate to the autonomy of independent contractors.

Hypothesis 4: More organizational barriers to breastfeeding will be experienced by practitioners who (a) spend more time working with breastfeeding mothers and (b) rate themselves as less competent.

T-test was used on subscale scores by the variables less time ($n = 97$) and more time ($n = 80$), but was not significant. The hypothesis was not supported that practitioners who spend more time with breastfeeding women and their infants will report more organizational barriers to breastfeeding support. The related hypothesis that more organizational barriers for breastfeeding will be perceived by those who are less competent in 23 skill areas was tested, but the correlations were not significant for both competence subscales.

Discussion

This survey is the first in the UK to assess and compare the training needs of UK GPs and paediatricians. These professional groups are likely to be influential in supporting mothers to breastfeed and in determining the allocation of resources for training

and policy on practice for others in the healthcare team.

Anonymous surveys have some methodological weaknesses, which must be borne in mind when interpreting the results. First of all, the size of the sample does not guarantee that the results are representative of the target group of GPs and paediatricians who work with mothers and infants who may breastfeed. Only 57 GPs and 120 paediatricians returned completed questionnaires. The small response is especially surprising in regard to GPs as 1423 paper copies of the questionnaires were distributed, and there was wide circulation of the electronic version. However, it is unknown how many distributors passed on the survey to GPs. The response rate for paediatricians was proportionately only slightly better, despite a targeted mailing and the active support of the Chair of the relevant Royal College Nutrition Committee. Of methodological interest is the higher response rate to the electronic version for the paediatric sample. It must be assumed that there is a possible bias in such a sample. However, it would be reasonable to assume bias in favour of those who have an interest and competence in breastfeeding, hence the results may overestimate the knowledge and training needs of a wider sample. The low response rate also may indicate indirectly that breastfeeding is not a priority topic for these professional groups.

Second, reliance on self-assessed skill and knowledge (except for the four multiple-choice policy knowledge items) introduces biases towards social desirability, which in this case is likely to be towards over-emphasizing both training received and competence. However, the correlation between tested policy knowledge and self-assessed clinical competence was significant, suggesting that this bias may be only moderate.

The analyses confirmed some of the assumed hypotheses. The first hypothesis of an association between greater competence and greater intensity of contact with women and infants who may breastfeed was confirmed for the clinical subscale, but not the educative subscale. The second hypothesis that doctors with greater intensity of contact in their work with breastfeeding women and their infants would identify more areas for update in the future was sup-

ported, but there was no relationship between competence and identifying more areas for future update. The third hypothesis of a relationship between intensity of current contact with women and infants who may breastfeed and knowledge of policy and guidance for breastfeeding was not supported. But the related hypothesis that greater knowledge of policy was related to higher level of self-assessed competence in breastfeeding support skills was confirmed in regard to both the competence scales. Finally, the fourth hypothesis that more organizational barriers to breastfeeding will be experienced by practitioners who spend more time working with breastfeeding mothers, and who rate themselves as less competent, was not supported. The implications of the findings are discussed below along with the descriptive analyses, which provided a profile of specific competences, training experienced and welcomed, experience of barriers to practice, and knowledge of policy.

At the heart of this survey is the self-assessment of current competence in breastfeeding skills. The survey found that GPs and paediatricians believed that they are at least competent in most of the skill areas of breastfeeding support. However, there was a sizeable minority who admitted to being not competent in key areas of practice where other practitioners may rely on them for advice or where they are likely to be regarded as a significant expert and gatekeeper for specialist referral, for example: 'detecting abnormal growth rates', 'prescribing to breastfeeding mothers', 'knowing when to intervene if a baby isn't breastfeeding initially', and 'advising about apparent milk insufficiency'. Paediatricians were more likely to rate themselves as competent in managing problems that arise early for breastfeeding mothers (e.g. 'advising about pain management' and 'advising about complementary fluids') and management of unwell babies and mothers ('supporting breastfeeding for mothers of SCBU babies/mothers recovering from Caesarean section'), i.e. problems that they are most likely to encounter in their practice. GPs were more likely to rate themselves as competent in areas less related to the acute phase of care, such as promoting breastfeeding ('encouraging mother to initiate breastfeeding'), dealing with medical aspects of breastfeeding ('knowledge of medical contra-indications to breast-

feeding', and 'breastfeeding as contraception'), as well as having better knowledge of socio-cultural aspects of breastfeeding ('understanding local cultural practices of infant feeding'). It was also confirmed that the more work time practitioners spent giving direct care to breastfeeding mothers and their babies, the more competent they believed they were in the more generic, less acute-phase, related skills.

The implications of these findings for the trainers of GPs and paediatricians are clear. Basic training and continuing professional development cannot be relied upon to produce GPs and paediatricians who are confident in all key skills. How these skill gaps are met currently is in part revealed by analysis of training received and welcomed by these same practitioners.

Paediatricians reported more skill areas as requiring update compared with GPs. There was little overlap in the most popular skills for update, which included advising about initiation of breastfeeding, at return to work, and moving to solids and weaning, essentially advising about transitions rather than clinical problems. For all respondents, it was confirmed that the more working time doctors spent on giving direct care to breastfeeding women and their infants, the more areas for update they identified. Identifying more areas for update was also associated with higher self-assessed clinical competence. This result may be evidence that within the sample, the 'converted' are also the more keen to seek to refine their skills, and that conversely, reliance on self-assessment and self-selection for training will mean that those who may have less 'on the job' experience and lower competence will not self-select for update. The fact that there was no association between self-assessed educative skills and identifying areas for update suggests that these skills may be less valued within the predominantly biomedical perspective of medical training. To overcome these professional barriers, we suggest that update on social aspects of care could be provided to doctors, alongside other practitioners, through common pathways of learning.

Both GPs and paediatricians rated self-study and practical observation of mothers and other practitioners as helpful forms of professional training. While most paediatricians rated attending formal univer-

sity-based modules as very helpful, GPs seldom rated such courses or formal courses by local or national trainers to be helpful. This may be due to content relevance, time or financial constraints. The reasons were not explored in the survey, but could usefully be explored given the large market of GPs and the requirements for continuing professional development in practice relevant skills.

Self-study is not only popular, but assumed to be available by nearly half of both paediatricians and GPs. Unfortunately, unless practitioners are guided to relevant sources, this may not be efficient or relevant training, although it also suggests that self-study materials could be developed and evaluated to meet this need. Given the importance accorded to observation of mothers and skilled practitioners, the materials might usefully include audio-visual training materials, and access to local expert practitioners for practical supervised training. Local Trust-based training was poorly rated, yet this may be more easily accessed than formal courses or special self-study materials, suggesting that the quality of provision should be reviewed and evaluated locally to avoid wasted resources. Significantly, GPs were more likely to undertake 'other' unspecified breastfeeding update or Trust-based training, again suggesting that current provision is not meeting most GPs' needs. In contrast, paediatricians' planned uptake of training more closely matched their ratings of the helpfulness of provision, and overall they expected to be able to access more forms of training than GPs. They expected to access informal methods of training, as well as the most preferred means such as formal nutrition courses. Some guidance on the most appropriate and affordable training may be helpful for both groups.

Effective clinical practice must be supported not only by training, but also by the policies and practices of other practitioners to ensure that mothers receive consistent and evidence-based care. Paediatricians, in comparison with GPs, experienced more organizational barriers for breastfeeding, which is likely to be a function of being employed rather than an independent contractor. However, respondents from both professional groups experienced problems related to lack of guidelines. Both paediatricians and GPs reported that working with other staff who may have

different approaches to breastfeeding leads to conflicting advice. This survey shows that respondents are often not able to access an agreed local breastfeeding policy, and all practitioners experienced at least one organizational barrier, with most experiencing more than this. Consistent with these indicators of poor organizational support for breastfeeding, even by medical staff who often have more power within healthcare organizations than other staff, is the very low levels of knowledge of national and international breastfeeding guidance and evidence-based policy. It is of concern that so few medical and paediatric respondents were correct in their knowledge of national and international policy in regard to breastfeeding. This may reflect a historic absence of public health aspects of breastfeeding in medical training, which unfortunately is not addressed at all in the public health section of the new paediatric training (RCPCH 2004).

Further, the levels of inaccurate information, as opposed to self-assessed knowledge gaps, may lead to practice that can be harmful to mothers and can undermine the efforts of other practitioners. For example, about half the respondents in both groups believed that it was correct to recommend the introduction of solid foods too early (at or below 4 months). Experience is no substitute for guided learning, as the level of knowledge of policies and guidance was not related to the amount of working time spent currently on giving direct care to breastfeeding mothers and their babies.

In conclusion, the survey has shown that there are many areas of breastfeeding care and support where doctors are not fully skilled even by their own admission, and knowledge of public health policy and guidance on breastfeeding is markedly poor. Training provided for paediatricians by universities and their Royal College is better regarded than the equivalent for GPs. Self-study and practical observation are welcomed, where opportunities for learning may not be of high quality, but are better regarded than those provided by the local health services. All forms of training should be evaluated, and targeted to those that most need training. Reliance on self-selection for training will widen the skill gaps, as the least competent are unlikely to seek update. All practitioners

working with mothers who may breastfeed should have access to effective training.

Attention to implementation and practice development is required, as the impact of the breastfeeding skills of one practitioner will be influenced by the practice of others, and by the suitability of healthcare equipment and accommodation. It is essential that training provision is improved alongside efforts to address the absence of breastfeeding policies and improve awareness and adherence to evidence-based practice by all healthcare practitioners. These are areas where leadership by doctors skilled in breastfeeding support and public health policy in regard to breastfeeding could make a real impact on improving practice and the service experienced by women and babies.

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Supplementary material

The following supplementary material is available for this article:
Appendix S1. Analyses performed for scale construction

This material is available as part of the online article from:
<http://www.blackwell-synergy.com/doi/abs/doi:10.1111/j.1740-8709.2006.00070.x>

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