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**Citation:**

James, J and Berkowitz, R 2012, 'General practitioners knowledge of breastfeeding management: A review of the literature', *Public Health Research*, vol. 2, no. 1, pp. 12-19.

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<http://dx.doi.org/10.5923/j.phr.20120201.03>

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# General Practitioners Knowledge of Breastfeeding Management: a Review of the Literature

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**Abstract** Breastmilk and breastfeeding are known to have significant advantages and benefits over the use of artificial formula for infants and young children[1-4]. These benefits are reflected in the increased costs related to preventable illnesses as well as the actual costs of artificial formulas[5]. Both the World Health Organization[3] and the National Health and Medical Research Council[1] Guidelines recommend exclusive breastfeeding for the first six months of a baby's life, with the gradual introduction of appropriate, complementary foods and continuing to breastfeed for two or more years. Pregnant and breastfeeding women seek support from a variety of sources, and in particular, health professionals. The medical practitioner or general practitioner (GP) is commonly the first health professional women encounter during pregnancy. The GP will continue to provide care for mother and then mother and baby after discharge from hospital. This literature review seeks to determine what is known about medical practitioners' attitudes to and levels of knowledge about, breastfeeding and human lactation. The review also considers how they initially learn and then maintain their knowledge once in general practice.

**Keywords** breastfeeding, general practitioners, knowledge, training, attitudes, health professionals, management

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## 1. Introduction and Background

Health professionals have a crucial role in promotion, support and management of breastfeeding. Frequently, the first health professional a woman sees when becoming pregnant is her General Practitioner (GP). This visit is an ideal opportunity to be proactive in promoting breastfeeding as the normal way to feed a baby[6-10]. Women may then be referred to an obstetrician, choose shared care with her GP or midwife or become part of a midwife-led model of care. Regardless of the model of care chosen, pregnancy is an appropriate time for all health professionals to promote and educate about optimal health practices[6,9-11]. Following discharge from the maternity setting in Australia, mothers and babies are seen by Child Health Nurses (also called Maternal & Child Health Nurses or Infant Welfare Nurses) whose role it is to support, educate and monitor their well-being. The scope of practice for these health professionals is much broader than infant feeding and incorporates physical and mental health, infant growth and development and family wellbeing. Similar health professionals work in other countries as described by Kronberg's[12] study of health visitors in Denmark.

The role of health professionals in promoting, supporting and encouraging breastfeeding has been identified by a

number of reviews found in the Cochrane Library. Dyson, McCormick and Renfrew[13] found that appropriate health professional intervention can result in a greater number of women beginning to breastfeed, while Britton, McCormick, Renfrew and Wade[14] found that professional support was effective in prolonging any breastfeeding.

However, while health professional attitudes to and knowledge about breastfeeding have improved over time, few studies have sought to determine how practising medical practitioners initially learn and then maintain current knowledge about the clinical management of breastfeeding challenges. This literature review brings together findings from a range of published papers that focus on the education, attitudes and knowledge of medical practitioners, both in Australia and internationally.

## 2. Search Strategies

Major databases including ProMed, Wiley Interscience, Thomson-Gale, Web of Science, ProQuest, EBSCO and the Cochrane Library were searched using the terms "breast-feeding", "breast feeding", "breast-feeding", "education", "health professional", "medical practitioner" and "physician". Additional search words included "general practitioner", "paediatrician" and "obstetrician" and were used to increase the depth of the search. These additional terms resulted in the same papers found in the original keyword searches. Papers written before 1990 were not included unless referenced more than three times in other materials. Articles that focussed on BFHI training and/ or BFHI hospital accreditation

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Published online at <http://journal.sapub.org/phr>

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were excluded as the focus was specific to Accreditation rather than further education for doctors.

### 3. Review

Little research has been published about the education of medical practitioners in the area of breastfeeding. Anecdotal evidence suggests that education is minimal and is not maintained following formal education and registration. A paucity of research or reviews of how Continuing Medical Education (CME) is accessed or used by medical practitioners was found by the literature search.

Brodribb[15] recently conducted a survey design study of 483 GP registrars' education in Australia. The study was conducted in two parts. Firstly, questionnaires were sent to Australian medical schools and to GP registrars enrolled with Regional Training Providers. This resulted in a return of 161 surveys. Brodribb's findings suggested that while all Australian medical schools report that they include breastfeeding in their medical program curricula, over 50% of her study cohort did not remember learning about breastfeeding during their program[16]. Brodribb also reported that the curricula itself varies between the nine Australian graduate medical schools in universities and within the different specialist streams that she surveyed. One graduate school did not respond. According to respondents, students in paediatrics, obstetrics, and general practice terms were exposed to some breastfeeding education in their degree program. Medical programs offerings varied from formal teaching exposure to informal or clinical exposure. Brodribb's research was based on a self-reported questionnaire; thus there is no way to determine the accuracy of responses. As Brodribb notes, some of the nominated program provider respondents may not be aware of what is actually taught about breastfeeding in their institutions and there was no attempt to determine exactly what was taught[17].

The second part of Brodribb's study sought to determine attitudes to, and knowledge of, breastfeeding in the Registrar cohort (N= 161) survey. Results suggested a generally positive attitude towards breastfeeding, while the level of knowledge was shown to be more diverse. Brodribb obtained information on respondent gender, breastfeeding exposure and experience, either personally or vicariously through being the parent of a breastfed baby. A greater proportion of females (71.1%) returned questionnaires which may have biased the results of the survey. Personal experience was seen as the most valuable learning method by respondents who were parents (62.2%) and those who were female (38.1%), while hospital post-graduate training was most useful for non-parents (35.5%). Over one-third of all respondents felt that their training provided sufficient education; however, there was a need for more in depth education[16].

Brodribb's study did not include the large group of medical practitioners already in general practice. It is unclear from the literature whether general practitioners are able to

access continuing education relating to breastfeeding or whether what is available is accessed by them. The literature review found only one independent study module provided by the Royal Australian College of General Practitioners, published in September 2007. More research is needed in this area to determine how best to address this gap in learning. There are a number of modules produced in the United States (WellStart International, American Academy of Pediatrics); however there was no investigation or research to evaluate whether these improved attitudes and knowledge of medical practitioners or how often they were accessed or completed.

In a survey of Chinese Australian mothers (N = 506) conducted in Perth, Western Australia, Li and colleagues[7] found that mothers who perceived their General Practitioners to be supportive of breastfeeding were ten times more likely to initiate breastfeeding in their home country and 17 times more likely to initiate in Australia and to breastfeed for longer periods of time. At six months following the birth, women who perceived GP support for breastfeeding were 63.0% (baby born in the home country) and 55.6% (gave birth in Australia) were breastfeeding. Those respondents who did not feel supported had significantly lower breastfeeding rates of 5.5% and 6.4% respectively. The results of this study demonstrate a clear link between the attitudes of general practitioners and positive breastfeeding outcomes for this population of women. The study did not look at GP on going education. The research focus was on women's perceptions of attitudes and support by her medical practitioner.

### 4. Practicing Health Professionals

The literature search identified a small amount of research which described education for practicing health professionals. These were generally small studies from specific geographical locations. Kronborg and colleagues[12] discussed the results of a Danish intervention study of two groups of health visitors, all of whom were registered nurses with one year of additional training in maternal and child health. These health visitors n = 106) called on new mothers (n = 1302) in their homes for a period after birth. The nurses in the intervention group received an additional 18 hours training based on the WHO breastfeeding counselling course. The intervention group then followed a standardized visiting program to new mothers while the control group offered their usual practice. The outcome measure described mothers' perceptions of the support they received. The survey results showed a keen interest in supporting breastfeeding in both groups, and that the health visitors in both groups had longer personal breastfeeding experience than on average in Denmark. The results also showed that the intervention group had greater knowledge of the self-regulating aspects of breastfeeding, with the mothers reporting that they received more practical and informational support for breastfeeding from the intervention group nurses.

A small number of published studies, which included an educational component, were identified in the literature

search[18-22]. Apart from Ingram's study, this body of research was reported in an issue of *Maternal and Child Nutrition* (October 2006) and was published as a special issue dedicated to exploring breastfeeding training and support for health professionals.

Ingram[19] undertook an intervention study of GP's (n=29), health visitors (n=18) and community midwives (n=3) in a clinical setting in the United Kingdom. They included multiple staff within the clinic (GP's, health visitors, practice nurses and community midwives). This was a small study that looked at the short-term impact of an education intervention which incorporated a CD-ROM with accompanying information sheets and an interactive session following the presentation. Pre and Post - tests were conducted as part of the intervention to establish baseline knowledge and attitudes. The study found that there was a high level of positive attitude towards breastfeeding amongst the participants'. The study also found that the statistical difference between knowledge about breastfeeding before and after the education was not significant. However, there was an improvement in knowledge about the management of common problems (breastmilk insufficiency, mastitis and appropriate drugs for lactating women).

The results of each of the studies reported in the special issue of *Maternal and Child Nutrition* (October 2006) is similar to other studies reported in this literature review. The survey of National Stakeholder organisations conducted by McFadden, Renfrew, Dykes and Burt[23] assessed the learning needs of UK based health practitioners and identified the available education courses and resources. This survey suggests that there is potential for significant impact on breastfeeding rates where there is sound knowledge about breastfeeding management. McFadden and colleagues described the need for ongoing national, multidisciplinary, breastfeeding education program to improve breastfeeding outcomes.,

Dykes[18] critical discussion of educational requirements of health practitioners looked specifically at current education of health professionals. From the discussion, recommendations were made for the development of national standards for breastfeeding education, coherent multidisciplinary undergraduate education, tailored for specific health professional groups, and highlighted the need to bring volunteer groups into the learning process and opportunities for counselling skill development. Dykes acknowledged the need to integrate the positive attitudes and knowledge that health practitioners already hold into their health care provision.

Wallace and Kosmala-Anderson[24] surveyed medical practitioners in the UK (n = 120) paediatricians and general practitioners (n=57) about their breastfeeding management skills and their knowledge about breastfeeding. Discussion from this survey centered on the need for public health policy on breastfeeding to be more accessible and included in health professional education. The paper noted that a weakness of the survey method is that those interested and currently practicing in the area are more likely to respond. This was

also a weakness noted by Brodribb[15]. Therefore, it was recommended that education targets those health professionals least likely to seek further training.

Abbot and colleagues[20] explored informal learning opportunities, and in particular those, provided outside of recognised academic or professional training programs, often through volunteer organisations. Participants (N = 31) in the interviews felt that they did not know everything that was locally available as they felt that the volunteer organisations often had limited coordination, which the respondents felt affected their ability to be consistent with wider information and content. The increased coordination between health professional and the volunteer sector was seen as a way for health professionals to support and encourage the local community through their contacts with the different local organisations. It was noted that these programs are often run by enthusiastic individuals who may have a great deal of knowledge about supporting breastfeeding women, but not as much knowledge about educating and promoting breastfeeding over the other competing demands on antenatal women. Abbott's investigation[20] found that over-dependence on individuals who may have limited capacities and availabilities could potentially affect the delivery of breastfeeding education programs. This finding also called for greater collaboration and coordination between organisations, to ensure that consistent information and quality learning opportunities were provided to health professionals, together with relevant information about their local community contacts.

Finally, Burt and colleagues[21] developed, trialled and evaluated a practice-based educational session and resource pack for general practitioners (N = 22 general practices) in a region of northern England with low breastfeeding rates. Burt noted that while it may be more cost effective to run education from a central venue, this was not as successful as basing education within individual practices. An important aspect of the education package Burt used was a resource pack left with each participant at the end of the presentation. This is a similar finding to Ingram's research[19].

Other studies demonstrated similar results. An Israeli study[25] surveyed attitudes and knowledge of paediatricians (n = 221), family physicians (n = 123) and gynaecologists (n = 134). While over 90% of respondents agreed that breastmilk and breastfeeding was the best nutritional source for infants and that breastfeeding women need encouragement and support, it was found that less than 50% of family physicians knew if their patients with infants were breastfeeding. Less than 20% of family doctors and gynaecologists discussed breastfeeding with their pregnant patients. The specific areas of knowledge of breastfeeding challenges discussed in the survey were: supporting breastfeeding upon return to work, low milk supply and breast problems. No mention was made of discussions with pregnant women about support for breastfeeding. The survey found that paediatricians in this cohort had greater knowledge about these specific breastfeeding challenges than the other specialities. The authors called for more education and

a proactive approach to breastfeeding support but did not present any information supporting this approach or detailing how they came to this conclusion.

A small study of the comparative training needs of doctors in England (n = 177) and Poland (n = 54) was conducted by Kosmala-Anderson, Wallace, Dunn and Law[26]. This research examined policy, clinical knowledge and education skills. There was little statistical difference between the doctors' clinical practice competence in either country. The questionnaires were slightly different in each country, which made direct comparison challenging. However, there were a number of findings that are relevant to both cohorts and of interest. The results suggest that there is a need for more core training in the area of breastfeeding. The researchers found that doctors in England had greater clinical knowledge than the Polish doctors. Surveyed doctors in both countries stated the need for more education and knowledge the more they worked with breastfeeding mothers and babies. The authors stated that a reliance on self-assessed competencies and updates was not the most appropriate method of learning as the least skilled clinicians responded that it was unlikely that they would seek additional information.

A mixed methods prospective study of breastfeeding determinants in rural Vietnam found that only 22% (n=463) of participating mothers reported receiving information or education about breastfeeding from their health workers. The authors found in the group discussion with health workers that many lacked the basic knowledge and skills to support breastfeeding and lacked confidence to provide appropriate counselling[27]. The paper further discussed the issues of influence by health workers, and that while there was a breastfeeding program; there had been very little training in the management of breastfeeding and counselling skills. The study also noted the impact of commercials for artificial formulas on the health workers and the mothers' families. This study found there was a clear need for further education and support for health workers to increase their knowledge and skills around breastfeeding.

The effect of a training intervention for hospital-based health care providers ((midwives (n = 27), medical doctors (n = 13) and nurses (n = 19)) on essential newborn care found significant improvement in breastfeeding outcomes[28]. A pre-intervention assessment was conducted, the results of which informed the objectives for the intervention and was then followed by a post-intervention assessment. The interventions covered infection, thermal protection, resuscitation of the newborn with asphyxia as well as early and exclusive breastfeeding. This study found that there were significant improvements in newborn care within the hospital following the training intervention. However, the statistical comparisons were made between before and after samples and not between the intervention and control groups. Thus, the higher level of skin-to-skin contact in the control group could be attributed to the lower caesarean rate compared to the intervention group. While this study found changed behaviour following a 4-day intensive education program, the model is within the hospital setting only. The study also

noted the need for more support for breastfeeding within the postnatal ward.

In the UK, Scott found that women attended physicians for assistance with mastitis[29]. Renfrew and colleagues[30] found that not only did women seek assistance for medical issues from their physicians, but also these same physicians were often the first line of support and information for women antenatally. Further research[6,31-33][17,34] at this same time, demonstrated that physicians education was at times described as "fragmented" where bits and pieces of information were picked up often without the knowledge behind the decisions and actions. Education was seen to be self-funded as the work environment did not provide enough leave time for further study. Smale[22] concluded that there was a need to change practice in order to be able to apply knowledge in appropriate settings as well as improve the education. However, their research found neither a systematic approach to breastfeeding education nor mandatory education in the UK.

Wallace and Kosmal-Anderson[24] found that while 69.6% of general practitioners (N = 57) surveyed felt able to advise on mastitis, a common breastfeeding problem, only 50.9% felt able to detect abnormal growth (e.g. lumps from blocked ducts or abscess) and only 33.9% felt confident to prescribe appropriate medications to breastfeeding mothers. As general practitioners are frequently the primary prescribers, this finding highlights a need for confidence, competence and knowledge.

Renfrew and colleagues'[30] paper describes the learning needs assessment program conducted across the UK and Wales and incorporated a multidisciplinary approach.

While not a fully funded research project, there were a number of significant findings. These included a deficit of knowledge, skills and attitudes towards breastfeeding. The authors found that health practitioners needed more skills to work with a diverse range of patients and to provide support in diverse settings. A second finding identified barriers to effective education and practice. This finding was for practitioners actively working in their chosen health professions. While Dykes' paper[18] identified, and Brodribb[17] surveyed current courses in Australia, they both stated that there is no consistent multidisciplinary education model available. Renfrew's study[30] found that interactive networks and partnerships across disciplines and organisations were needed to enhance educational opportunities and staff development. It also raised questions about who was responsible for developing and implementing the education programs. Appropriate levels of funding for such work appeared to be important for continuing education.

## 5. North America

North America appears to present similar findings, although the identified studies are not as recent as those UK studies identified. Freed and colleagues[6] in a national assessment of knowledge, attitudes, training and experience

towards breastfeeding, reported that physicians were frequently a source of contact during pregnancy and this required them to have a satisfactory understanding of breastfeeding management and commitment to the promotion and support of breastfeeding. Freed's study identified deficiencies in knowledge, experience and training amongst participants. Education was most often presented through passive instruction with no clinical practice. Only 55% of respondents had one episode of learning during their training that included breastfeeding. Less than 50% of all participants surveyed felt their breastfeeding training was adequate. He concluded by stating that there needs to be an active role in breastfeeding promotion, management and counselling. Freed's research demonstrated that there were deficiencies in knowledge and understanding of breastfeeding management within this particular cohort.

Other studies reinforce Freed's research findings. Schanler, O'Conner and Lawrence[35] noted in their survey that the majority of the paediatricians (56%) who responded had not attended any breastfeeding management education in the previous three years. This study recommended more educational opportunities for practicing paediatricians. Burglehaus and colleagues[31] noted that while research clearly identifies the need for breastfeeding education, little is provided. This study looked at predisposing factors, situations that have previously occurred and influence the rationale for behaviour in order to improve breastfeeding support. She went on to state that there is a need for strategies directed at enabling or motivational skills and reinforcing factors that build self-confidence in the implementation of breastfeeding support, promotion and counselling. Although based in one geographical area, Burglehaus found the need for more education in primary medical training to provide enabling of learned skills. Further studies and surveys of medical practitioners in more recent years have reported similar results in that proactive support for breastfeeding results in better breastfeeding outcomes. A study by Arthur, Saenz and Relpogle[36] of 216 female physicians found that while the majority felt comfortable discussing and treating common breastfeeding problems, they had received little training in lactation management and there was little proactive promotion of breastfeeding in their practice.

An early study of medical professionals' attitudes towards breastfeeding by Lawrence[34] found that breastfeeding support and counselling did take place, but only for those patients who initiated discussion. Lawrence also identified the need for more education and proactive roles to encourage breastfeeding together with less separation of mother and baby while in hospital. It is interesting to note that since this study, the promotion of breastfeeding through the Baby Friendly (Hospital/Health) Initiative has led to a number of articles about supporting breastfeeding through the WHO 10-Steps to Successful Breastfeeding.[37-40]. In particular, Step Seven of the 10-Steps to Successful Breastfeeding states that baby friendly facilities should practice rooming-in or keeping mothers and their infants together 24 hours a day. Many maternity hospitals in Australia now follow this prac-

tice to encourage mothers to care for their baby and begin to recognise signs of hunger in order to more confidently care for their baby at home.

Research to date has demonstrated that support and positive opinions towards breastfeeding by medical practitioners gave positive messages to mothers that helped to establish and then maintain breastfeeding[6,9,22,24]. Traveras also noted that clinician support for breastfeeding was a modifiable factor in promoting breastfeeding continuation. In 2003, Traveras wrote that he and his team were unaware of any controlled trials that evaluated the effectiveness of clinician support for breastfeeding being delivered during routine preventative visits. Kronberg & colleagues[12] as previously noted, have now conducted one small trial of education for health professionals. The intervention group took part in an interactive course to achieve greater depth of knowledge about breastfeeding. Both groups had a strong base knowledge before the study. However, because there was no pre-test to establish base levels of knowledge, the researchers were unable to perform a thorough analysis of knowledge and attitude changes. They found that the interactive course increased confidence as well as management knowledge in common breastfeeding problems encountered by the health visitors. The results from the mothers confirmed that they had received greater information and support for breastfeeding.

A more recent cohort study of female physicians and nurses working in Hubei province, central China (physicians n=158 and nurses n=209) found that, while all agreed that they had a responsibility to encourage and support breastfeeding, only 18.5% questioned their patients about breastfeeding and even less (12.8%) gave any advice[41]. Of interest was their explanation for not discussing breastfeeding problems, which was based on their belief that they did not possess the knowledge and skills to appropriately deal with their patients' breastfeeding problems. Only 20.7% of participants in this study had attended any professional clinical training and the majority stated that they wanted more information about breastfeeding. The authors conclude that Chinese physicians and nurses have low levels of knowledge about, and negative attitudes towards breastfeeding and low rates of personal breastfeeding. They recommend appropriate education and highlight the importance of BFHI implementation and training for health professionals who work with pregnant women and mothers and babies.

Other research by Schanler, O'Connor & Lawrence[35] in the US demonstrates that only 65% of responding paediatricians (N = 730) were promoting breastfeeding as an exclusive feeding practice for infants first month of life. Traveras (2004) found that medical practitioners who were proactive in promoting and supporting breastfeeding did make a positive difference to the duration of exclusive breastfeeding. This study also reported that many medical practitioners did not feel confident in their skills, and this could be a risk factor for the less than optimal breastfeeding outcomes.

Most of the identified research found a bias towards responses from female practitioners. There was also a ten-

dependency noted from practitioners with experience, either personal or via their partners. It was noted by Traveras[9] and Renfrew[30] that it is unknown whether more female practitioners responded to the surveys because of a personal interest and/ or previous experience. These were biases that will need to be considered in future research. The majority of the works noted in this review have differentiated between male and female health practitioners, [9,15,18,19,34] which has highlighted both experiential and gender biases. However, further research is needed to clarify whether male medical practitioners feel less comfortable working with breastfeeding mothers than their female colleagues.

Research conducted on small educational programs in the United States had similar findings to Kronberg's and Ingram's two studies. A cross sectional study of 202 health care providers conducted by Mitra, Khoury, Carothers, & Foretich[42] found that through promotional campaigns on television and radio, breastfeeding awareness and promotion was increased by nurses in Mississippi. However, it should also be noted that this was a survey following a general campaign to the public and not just health professionals. The authors also noted that it was unknown why the promotion increased breastfeeding awareness.

Hillenbrand and Larsen[33] conducted a four-day educational intervention program that included passive and active learning methods (lecture, discussion groups and role plays) for paediatric residents (N = 49) in a single training hospital. They found statistically significant increased knowledge, confidence and behaviours about benefits of breastfeeding amongst those residents. It was also found that there was an observable increase in performance among residents who did not attend the educational sessions, which may have been due to a spread of behaviours through natural discussions. This was not a randomized trial; therefore, no analysis was undertaken on this spread of behaviours.

Similarly, a study of second and third year family practice residents (n=24) at the University of Wisconsin (Madison, USA) introduced a pre and post intervention test and compared the outcomes to a matched control group[43]. The intervention was designed to improve clinicians' knowledge and confidence about common breastfeeding problems. The findings showed a significant improvement in the intervention groups' skills in evaluating and diagnosing three common breastfeeding problems seen in primary care practice: positioning and attachment, nipple pain and low milk supply. The authors believe that the interactive, problem based workshop improves clinician diagnostic skills and recommend a larger study to confirm their findings.

Krogstrand and Parr[44] surveyed physicians in Nebraska (N =262) and asked about specific breastfeeding education and information. Respondents noted that problem-solving and breastfeeding management were topics most requested, and a course in counselling skills was seen as highly desirable. However, 44% of participants did not respond to the questions that asked them to recommend further learning needs.

A study by Labarere et al (2008) demonstrated that edu-

cation programs could have significant benefits for facilitating increased breastfeeding rates. Labarere and colleagues[45] conducted a randomized open trial of breastfeeding mothers at a teaching hospital in Chambéry, France. The research found that the intervention group (n = 116) had fewer breastfeeding problems, although their exclusive breastfeeding rate was only slightly higher at 18 weeks compared to 13 weeks in the control group (n = 115). The significant results were secondary to the main research which showed that short training programs for practicing physicians enabled them to provide greater support and contributed to improving breastfeeding outcomes.

Two other studies in the United States were survey based and therefore not as rigorous in their methodology as the randomized intervention trials. Shaikh and Smillie[46] found through a self-reported survey of clinic based lead physicians (N = 13 clinics responded ) that while there was a growth of membership in the Academy of Breastfeeding Medicine there appeared to be no explicit educational program. Clinics used in house educational programs as well as materials provided by La Leche League International, The American Academy of Pediatrics and teaching hospitals. There was no specific information about the quantity or quality of the education programs. A number of study modules were available, but there is not information on use or how their use might affect clinical knowledge or practice. Betzold, Laughlin and Shi[47] conducted a small intervention study incorporating the distribution of handouts for women attending prenatal and well-child visits.(N = 33) within one family practice office. The aim of this study was to increase breastfeeding rates for new mothers attending the practice. As a part of this, participant physicians were instructed to emphasize certain key points concerning breastfeeding during antenatal visits and subsequent postnatal visits. It was not a part of the study to evaluate the education of the physicians within the practice. While the goals set by the mothers were met by over 55% for exclusive breastfeeding, no conclusions can be drawn about the education of physicians in this medical practice.

## 6. Conclusions

The literature shows, that while attitude and knowledge of health practitioners towards breastfeeding has been studied, there are few programs or opportunities to provide education to develop the knowledge of medical practitioners. Research that provided interactive education seems to have a greater impact on breastfeeding outcomes. However, the type of educational programs that best suited practicing physicians has had limited study. The aims of most of the research identified were to support mothers in their breastfeeding. The education of the medical practitioners was secondary to the breastfeeding support. No research into how medical practitioners have in the past or are currently accessing further education was found. A number of programs were based around promotion of breastfeeding and the support of the

BFHI practices within hospitals and specific medical practices.

There is little evidence of research concentrating on general medical practitioners' skills, knowledge or attitudes towards breastfeeding. In Australia, the GP has broad knowledge and skills and are seen as the gatekeeper for referral to more specialized medical care. Therefore, more work needs to be done in this area. Brodribb and others have shown that while all universities have a breastfeeding component in their medical education, less than 50% of registrars could remember anything from that educational experience. With the diminishing number of Australian babies being breastfed exclusively for the first six months of life, the work of up-skilling general practitioners in a manner that is both effective and accessible is essential and should be achievable with responsive and appropriate education modalities.

The challenge for the future is to identify and develop educational models that are accessible and relevant to working general practitioners and to ensuring that these are outcome focussed, evaluated and reported nationally.

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