



# ACERH

AUSTRALIAN CENTRE FOR ECONOMIC RESEARCH ON HEALTH



WORKING PAPER SERIES

ACERH Working Paper Number 4  
December 2008

‘VOLDEMORT’ AND HEALTH PROFESSIONAL  
KNOWLEDGE OF BREASTFEEDING - DO  
JOURNAL TITLES AND ABSTRACTS ACCURATELY  
CONVEY FINDINGS ON DIFFERENTIAL HEALTH  
OUTCOMES FOR FORMULA FED INFANTS?

Julie P Smith, Mark D Dunstone  
and Megan E Elliott-Rudder



<This page is blank>

Australian Centre for Economic Research on Health

**'Voldemort' and health professional knowledge of  
breastfeeding – do journal titles and abstracts  
accurately convey findings on differential health  
outcomes for formula fed infants?\***

**Julie P Smith<sup>1</sup>, Mark D Dunstone<sup>2</sup> and Megan E Elliott-Rudder<sup>3</sup>**

ACERH Working Paper Number 4

December 2008

1. Australian Centre for Economic Research on Health (ACERH), The Australian National University
2. Australian Department of Broadband, Communications and the Digital Economy
3. Rural Clinical School, University of New South Wales

\* This research was supported in part by an Australian Postdoctoral Fellowship and Discovery Project funding from the Australian Research Council held by Julie Smith. A revised version of this paper has been accepted for publication in the *Journal of Human Lactation*.

*Corresponding Author:*

Dr Julie P Smith  
ACERH (ANU)  
The Australian National University  
Canberra ACT 0200

T: +61 2 6125 3688  
E: [julie.smith@anu.edu.au](mailto:julie.smith@anu.edu.au)

*Address for general correspondence regarding Working Paper series:*

Australian Centre for Economic Research on Health  
The Australian National University  
Canberra ACT 0200  
Australia

T: +61 2 6125 3688

F: +61 2 6125 9123

E: [acerh@anu.edu.au](mailto:acerh@anu.edu.au)

ISBN: 978-0-9805298-6-9

ISSN: 1836-0130

Published by Australian Centre for Economic Research on Health (ACERH)

<http://www.acerh.edu.au>

## **ABSTRACT**

Effective promotion of breastfeeding is constrained if health professionals' knowledge on its importance is deficient. This study asks if findings are easily accessed by health professionals; that is, whether formula feeding is 'named' as the risk factor in published research, or whether — like 'Voldemort' in *Harry Potter* — it is 'He Who Shall Not Be Named'. Our systematic analysis of information content of titles and abstracts of 78 studies which had reported poorer health among formula infants showed that their titles and abstracts avoid mentioning formula. Initiatives to increase breastfeeding have described the importance of accurate language, and well informed health professional support. This study showed a surprising "Voldemort effect" in the studies examined; formula feeding was rarely named as an exposure increasing health risk in publication titles or abstracts. If widespread, this skew in communication of research findings may reduce health professionals' knowledge and support for breastfeeding.

**KEY WORDS:** Breastfeeding, Health Education, Health knowledge, attitudes, practice; Health personnel; Health promotion; Delivery of healthcare; Health services; clinician support, communication.

**ABBREVIATIONS.** AAP, American Academy of Pediatrics

<This page is blank>

## INTRODUCTION

The important role of early nutrition in later life human health and development is increasingly evident in scientific research into human health and development.<sup>1, 2</sup> In 2001 the World Health Assembly endorsed recommendations for 6 months of exclusive breastfeeding and continued breastfeeding to 2 years and beyond, along with appropriate complementary foods'.<sup>3</sup> The accumulating evidence on the importance of breastfeeding is also recognized by the American Academy of Pediatrics (AAP), as is the important role of health providers in advising mothers on infant feeding. The AAP Policy Statement on Breastfeeding and Human Milk<sup>4</sup> urges pediatricians and other health care professionals to 'promote, support, and protect breastfeeding enthusiastically', and take 'a strong position on behalf of breastfeeding' in light of the published evidence. Many studies report that health practitioners accept they have an important responsibility for promoting breastfeeding. Nevertheless, physician apathy and misinformation is a leading barrier to breastfeeding. The AAP for example, notes that 'lack of guidance and encouragement from health professionals' is one of the obstacles to initiation and continuation of breastfeeding.

Health professionals need knowledge about the risks of early weaning from breastmilk so as to sincerely and effectively promote breastfeeding. Likewise, skilled and knowledgeable support is crucial to help mothers manage breastfeeding problems. However, for many health professionals, breastfeeding training was inadequate and personal experience or passive learning the main source of knowledge on breastfeeding.<sup>5</sup> If health professionals are to increase their knowledge of breastfeeding within their usual and preferred processes of ongoing learning, the structure of published research is relevant.<sup>6, 7</sup>

This study aimed to assess whether health professionals have access to unbiased information on the health implications of formula feeding through perusing the titles and abstracts of a sample of published scientific studies of health impacts of breastfeeding versus formula feeding. The question we ask is: does the information conveyed to the casual reader of relevant scientific journals

accurately convey their findings that formula-fed infants have worse health and development outcomes than the norm, that is, breastfed infants? Or alternatively, is breastfeeding dammed with faint praise, and/or formula feeding treated like Harry Potter's nemesis Voldemort – as 'He Who Must Not Be Named'.<sup>1</sup>

## **METHODS**

The 2005 AAP Policy Statement on Breastfeeding and the Use of Human Milk cites 78 scientific studies as evidence that breastfeeding is protective against a range of infectious and chronic diseases. We systematically analysed the information content of titles and abstracts for these key studies on the health benefits of breastfeeding. This strategy is chosen because the Statement by the AAP can be argued to be authoritative among physicians and policymakers. The 78 articles are cited as evidence for a policy position supporting breastfeeding over formula feeding. Such a sample of research papers could be expected to be a reasonably unbiased selection of information available to medical practitioners as part of the case for supporting breastfeeding. Nor would we expect any bias towards silence on the relationship between infant formula feeding and elevated risks of ill health from an academy of health professionals concerned with children.

The studies analysed in this study<sup>8-39,40-86</sup> are cited in the policy statement as evidence for the following.

### Infectious Diseases

Research in developed and developing countries of the world, including middle-class populations in developed countries, provides strong evidence that human milk feeding decreases the incidence and/or severity of a wide range of infectious diseases<sup>3</sup> including bacterial meningitis, bacteremia, diarrhoea,

---

<sup>1</sup> Voldemort is a character in the Harry Potter series, the evil wizard known as 'He Who Shall Not Be Named'. His name must never be mentioned for fear of retribution by his supporters.



respiratory tract infection, necrotizing enterocolitis, otitis media, urinary tract infection, and late-onset sepsis in preterm infants. In addition, post neonatal infant mortality rates in the United States are reduced by 21% in breastfed infants.

#### Other Health Outcomes

Some studies suggest decreased rates of sudden infant death syndrome in the first year of life and reduction in incidence of insulin-dependent (type 1) and non-insulin-dependent (type 2) diabetes mellitus, lymphoma, leukaemia, and Hodgkin disease, overweight and obesity, hypercholesterolemia, and asthma in older children and adults who were breastfed, compared with individuals who were not breastfed.

Additional research in this area is warranted.

#### Neurodevelopment

Breastfeeding has been associated with slightly enhanced performance on tests of cognitive development.

#### Maternal Health Benefits

Important health benefits of breastfeeding and lactation are also described for mothers. The benefits include decreased postpartum bleeding and more rapid uterine involution attributable to increased concentrations of oxytocin, decreased menstrual blood loss and increased child spacing attributable to lactational amenorrhea, earlier return to pre-pregnancy weight, decreased risk of breast cancer, decreased risk of ovarian cancer, and possibly decreased risk of hip fractures and osteoporosis in the postmenopausal period.

That is, the articles are judged by the AAP to provide scientific evidence supporting a conclusion that artificial feeding increases the incidence of illness and disease in infants and mothers compared to breastfeeding.

Firstly, the researchers classified each of the articles as ‘misleading’, ‘neutral or silent’, or ‘naming’, depending on the information conveyed in the titles. Table 1 sets out the categories and examples of titles in each category.

**TABLE 1.** Categorisation of titles

| Category          | Description   | Examples  |
|-------------------|---|---|
| Misleading        | Title associates breastmilk or breastfeeding with an illness  | <p>'Breastfeeding and the sudden infant death syndrome'<sup>86</sup></p> <p>'Breastfeeding and childhood obesity'<sup>82</sup></p> <p>'Breastfeeding and the risk of post neonatal death in the United States'<sup>73</sup></p> <p>'Breastmilk and neonatal necrotising enterocolitis'<sup>41</sup></p> |
| Neutral           | Title is neutral or silent on results   | 'Brainstem maturation in premature infants' <sup>85</sup>   |
| Or Silent         | <p><i>or</i></p> <p>Title includes positive statement about breastmilk or breastfeeding but does not mention infant formula</p> | <p>'Risk factors for primary invasive Haemophilus influenzae disease'<sup>49</sup></p> <p>'Breastfeeding and lowering the risk of childhood obesity'<sup>81</sup></p> <p>'Longer breastfeeding and protection against childhood leukemia and lymphomas'<sup>77</sup></p>                                |
| 'Names Voldemort' | Title includes a reference to artificial infant feeding or formula  | <p>'Differences in morbidity between breastfed and formula-fed infants'<sup>66</sup></p> <p>'Cow's milk exposure and type I diabetes mellitus'<sup>59, 73</sup></p>   |

Secondly, for abstracts, we used a slightly different categorization which reflected how the findings of the paper were described in the abstract (Table 2).

Each researcher categorized the articles independently, reducing the potential for bias. One researcher is a health economist with experience in breastfeeding counseling, one has a background in biological sciences and public policy advice, one is a physician in private practice and a qualified

breastfeeding counsellor. A Kappa statistic was calculated to evaluate the consistency of the assessments. This statistic is a common measure which allows for chance in evaluating interrater variability, or of the extent of agreement between investigators, for example, in diagnosing a condition, or identifying an adverse event.

The titles are reported in Appendix A and abstracts are available through Medline.

---

**TABLE 2.** Categorisation of abstracts

---

| Category              | Description  | Examples  |
|-----------------------|--|---|
| No mention of formula | No mention of formula or does not compare formula feeding to breastfeeding except in describing method | <p>‘Children who were ever breastfed had 0.79 times the risk of never breastfed children for dying in the post neonatal period. Longer breastfeeding was associated with lower risk.....promoting breastfeeding has the potential to save or delay approximately 720 post-neonatal deaths in the United States each year.’<sup>73</sup></p> <p>‘The salutary effect of exclusive breastfeeding on cognitive development was greater for children born small for gestational age (SGA) than those born appropriate for gestational age (AGA). Based on a linear association between duration of exclusive breastfeeding and intelligence quotient (IQ), children born SGA and exclusively breastfed for 24 weeks were predicted to have a 11-point IQ advantage over those breastfed for 12 weeks, as opposed to a 3-point advantage for children born AGA with similar durations of breastfeeding.’<sup>21</sup></p> <p>‘Exclusive breastfeeding during the first months after birth is associated with lower asthma rates during childhood.’<sup>60</sup></p> <p>‘Among children 2 to 71 months of age who had been exposed to environmental tobacco smoke, those who had ever been breast-fed had significantly reduced risks of asthma and</p> |

wheeze compared with those who had never been breast-fed.<sup>72</sup>

|   |   |  |
|---|---|--|
| <p>Neutral/Breastfeeding better than formula</p>  | <p>Breastfeeding better compared to formula feeding: This category comprises those studies that compared breastfeeding to formula feeding. Mostly conclusions couched in terms of breastfeeding advantages/or benefits over formula, not elevated risks from formula feeding.</p> | <p>‘Human milk feeding among very low birth weight infants (VLBW) was associated with a lower incidence of retinopathy of pre-maturity compared to exclusively formula-fed VLBW infants after adjusting for confounding variables.’<sup>50</sup></p> <p>‘Infants who were fed breast milk more than infant formula, or who were breastfed for longer periods, had a lower risk of being overweight during older childhood and adolescence.’<sup>58</sup></p>   |
| <p>Increased risk of ill health associated with formula feeding – ‘Names Voldemort’</p> | <p>Formula feeding associated with increased risk of ill health: This category comprises those abstracts that conveyed that formula fed infants had higher risks of ill health, or it was clear the formula feeding was not the norm or control:</p>                              | <p>‘Exclusive formula feeding could account for an estimated 500 extra cases of necrotising enterocolitis each year.’<sup>41</sup></p> <p>‘The results of the analysis show that there is an association between bottle-feeding and SIDS.’<sup>38</sup></p> <p>‘We tested the hypothesis that formula feeding in infancy programs greater leptin concentrations relative to fat mass in later life.’<sup>14</sup></p> <p>‘The combined analysis indicated that bottle-fed infants were twice as likely to die from SIDS.’<sup>38</sup></p> |

---

## RESULTS

Table 3 shows the distribution of the articles when categorised by their title. There was a good to excellent level of agreement between the three pairs of assessments, with the Kappa statistic between 0.71 and 0.87.<sup>2</sup> Table 3 shows that:

- Only around 3-5 of the 78 articles (4-6 per cent) were assessed to refer to infant formula in the title, for example, ‘Differences in morbidity between breastfed and formula-fed infants’, ‘Cow’s milk exposure and type I diabetes mellitus’.
- Around two thirds of articles (63-67 per cent) had only a neutral statement in the title, or referred to the protection conferred by breastfeeding, reinforcing the cultural norm of breastfeeding as ideal rather than usual or ordinary.
- Around a third of the titles (29-36 per cent) misleadingly associated breastfeeding with illness or disease, through statements implying guilt through association, such as ‘Breastfeeding and risk of post neonatal death in the United States’, ‘Breastfeeding and the sudden infant death syndrome’, ‘Breastfeeding and neonatal necrotising enterocolitis’.

Table 4 sets out similar data for the information content of the abstracts for these publications. Four articles were excluded as abstracts were not available or not categorised. Agreement between assessments was fair/good, with Kappa scores ranging from 0.56 to 0.62. Abstracts show a similar communication bias (see Table 4).

---

<sup>2</sup> The Kappa statistic measures the agreement between the evaluations of two raters when both are rating the same object. A value of 1 indicates perfect agreement. A value of 0 indicates that agreement is no better than chance. This was calculated using SPSS 12.0.1. A Kappa score can be considered as poor interrater agreement (<0.40), fair (0.40 to 0.60), good (0.61 to 0.80), and excellent (0.81 to 1.0).

**TABLE 3.** Categorisation of titles**Researcher 1**

|               | Frequency | Percent | Valid Percent |
|---------------|-----------|---------|---------------|
| misleading    | 24        | 30.8    | 30.8          |
| Neutral       | 49        | 62.8    | 62.8          |
| names formula | 5         | 6.4     | 6.4           |
| Total         | 78        | 100.0   | 100.0         |

**Researcher 2**

|               | Frequency | Percent | Valid Percent |
|---------------|-----------|---------|---------------|
| misleading    | 23        | 29.5    | 29.5          |
| neutral       | 52        | 66.7    | 66.7          |
| names formula | 3         | 3.8     | 3.8           |
| Total         | 78        | 100.0   | 100.0         |

**Researcher 3**

|               | Frequency | Percent | Valid Percent |
|---------------|-----------|---------|---------------|
| misleading    | 28        | 35.9    | 35.9          |
| neutral       | 45        | 57.7    | 57.7          |
| names formula | 5         | 6.4     | 6.4           |
| Total         | 78        | 100.0   | 100.0         |

**TABLE 4.** Categorisation of abstracts

| <b>Researcher 1</b>     |                        | Frequency | Percent | Valid Percent |
|-------------------------|------------------------|-----------|---------|---------------|
| Missing/not categorised | -1                     | 4         | 5.1     |               |
| Valid                   | no mention             | 55        | 70.5    | 74.3          |
|                         | bf better              | 12        | 15.4    | 16.2          |
|                         | increased risk from af | 7         | 9.0     | 9.5           |
|                         | Total                  | 74        | 94.9    | 100.0         |
| Total                   |                        | 78        | 100.0   |               |

  

| <b>Researcher 2</b>     |                        | Frequency | Percent | Valid Percent |
|-------------------------|------------------------|-----------|---------|---------------|
| Missing/not categorised | -1                     | 4         | 5.1     |               |
| Valid                   | no mention             | 53        | 67.9    | 71.6          |
|                         | bf better              | 16        | 20.5    | 21.6          |
|                         | increased risk from af | 5         | 6.4     | 6.8           |
|                         | Total                  | 74        | 94.9    | 100.0         |
| Total                   |                        | 78        | 100.0   |               |

  

| <b>Researcher 3</b>     |                        | Frequency | Percent | Valid Percent |
|-------------------------|------------------------|-----------|---------|---------------|
| Missing/not categorised | -1                     | 6         | 7.7     |               |
| Valid                   | no mention             | 43        | 55.1    | 59.7          |
|                         | bf better              | 17        | 21.8    | 23.6          |
|                         | increased risk from af | 12        | 15.4    | 16.7          |
|                         | Total                  | 72        | 92.3    | 100.0         |
| Total                   |                        | 78        | 100.0   |               |

- Around 5-12 of the 74 abstracts examined (6-15 per cent) were considered to communicate that artificial infant feeding was associated with elevated risk of illness. These included, for example, statements such as ‘exclusive formula feeding could account for an estimated 500 extra cases of necrotising enterocolitis each year’, ‘the results of the analysis show that there is an association between bottle-feeding and SIDS’.
- A further 12-16 of the papers’ abstracts (16-22 per cent) compare breastfeeding to artificial feeding with conclusions couched in terms of the ‘advantages’ of breastfeeding.
- The remaining 53-55 abstracts (72-74 per cent) make no mention of artificial infant formula, and would not challenge a reader’s erroneous belief or assumption that artificial feeding carries no increased health risks for infants.

## **DISCUSSION AND CONCLUSION**

The AAP Policy Statement on breastfeeding and human milk<sup>87</sup> stated that ‘exclusive breastfeeding is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development and all other short-and long term outcomes’. This has implications for research design which are rarely considered. Most studies examined above hypothesized formula feeding as the norm and tested for differential outcomes from breastfeeding defined as the ‘exposure/intervention’. This approach can bias research through how the research hypothesis is specified, and through poor specification of infant feeding categories, with a tendency to underestimation of risk associated with non human milk feeding.

In recent years commentators have also highlighted the bias and negative effects on breastfeeding practices of normalizing artificial feeding, referring for example, to ‘the benefits of breastfeeding’ rather than, for example, ‘the risks of formula feeding’.<sup>88</sup> Current health policy initiatives including social marketing campaigns aim to promote breastfeeding through more informed choice about infant feeding. Nevertheless, surveys reveal considerable cultural ambivalence and ignorance about



the health consequences of artificial infant feeding. For example, some 30 per cent of mothers surveyed by the United States' 'Babies Were Born To Be Breastfed!' Campaign agreed with a statement that 'infant formula is as good as breastmilk', and only a minority of the survey population agreed that 'a breastfed baby is less likely to get ear infections or respiratory illness'.<sup>89</sup> Likewise, a clear majority of public opinion in the United States supports the view that 'breastfeeding is healthier for babies', yet substantially more than half of the surveyed population disagree that 'feeding a baby formula instead of breastmilk increases the chances the baby will get sick'.<sup>90</sup>

Research has shown the important role of health professionals in mothers' breastfeeding decisions. However, significant breastfeeding knowledge deficits have been found among health professionals working with mothers and babies, including regarding known health disadvantages faced by formula fed infants.<sup>4</sup> For example,

- a 2005 study of 262 Nebraska physicians (specializing in obstetrics, gynecology, pediatrics and family practice) reported that 18% did not disagree with introducing cereal from 3 weeks, and a significant minority (12%) did not agree that breastfeeding protected against the risk of diarrhea.<sup>91</sup>
- Although "most" of a similar group of 428 Wisconsin physicians agreed in 2002 that breastfeeding was the best source of nutrition for infants,<sup>92</sup> a survey of 50 pediatricians in Eastern Carolina published around the same time found 26% did not agree that breastfeeding was the best nutrition for infants.<sup>93</sup> Furthermore, 23% did not agree that breastfeeding decreased the risk of gastroenteritis, and 17% did not agree it decreased otitis media risk.

- While all but 1-3% of physicians in the above studies<sup>91, 93</sup> agreed that breastfeeding benefited the immune system, nearly two thirds did not agree that breastfeeding reduced the risk of obesity or maternal breast cancer.
- Among nurses a recent US study<sup>94</sup> found 46% did not disagree that most formulas are nutritionally equivalent to breastmilk, little different from earlier studies of health professional<sup>95, 96</sup>s including nurses<sup>97</sup> and physicians<sup>98</sup> in the US and Australia.
- Earlier studies of physicians found lack of knowledge on health benefits of breastfeeding, with around a third of obstetric/gynecology specialists in a US study stating that formula fed infants were as healthy in the long run as breastfed infants,<sup>99</sup> and 12-19% of pediatricians disagreeing that the benefits of breastfeeding exceeded any difficulties or inconvenience to mothers.<sup>98</sup>
- A large nationwide study of 3115 residents and 1920 physicians in pediatrics, obstetrics/gynecology and family medicine reported in 1995 that 29-53% of practicing physicians did not agree that breastfeeding reduced otitis media and 18-30% that it reduced gastroenteritis. Among resident physicians, the proportions were 40-64% and 31-36% respectively.<sup>100</sup>
- Another study of pediatric staff in an academic training program found only a 60% median knowledge score on a true/false breastfeeding knowledge questionnaire.<sup>101</sup>
- Among nurse practitioners, knowledge of breastfeeding benefits was somewhat better in a 2000 study, but still 22% did not agree breastfeeding reduced otitis media and 15% did not agree that it reduced gastroenteritis risk.<sup>102</sup> The comparable data for obstetricians, pediatricians and family medicine physicians from the nationwide study was 53 and 24, 29 and 18, and 35 and 30% respectively.

Practitioners in these studies report they have had limited opportunities for training or ongoing education about breastfeeding and lack confidence in their ability to promote and support it.

Our analysis of the AAP cited papers' titles has shown a surprisingly strong 'Voldemort effect' among titles and abstracts of articles likely to be utilised by physicians to access information on health impacts of breastfeeding versus formula feeding. Such skew in communication of research findings, if widespread, would help explain why numerous surveys have shown health professionals feel poorly equipped for the role they are expected to play in promoting breastfeeding.

Health professionals access a range of information, and the articles analysed here are only a small proportion of the information available as the basis for advice to clients on infant feeding. It is of concern that many health professionals working in contact with mothers and babies appeared unaware of AAP and WHO infant feeding recommendations.<sup>103-105</sup> The articles we analysed were selected because they were judged by the AAP to constitute evidence of higher health risk from formula feeding. As such, their title and abstract could be expected to be unambiguous in the message conveyed about the investigated risk factor and study findings. The AAP Statement has considerable authority and influence as a statement by the professional body of pediatricians, and could be expected to be a widely accessed gateway to information in this area.

A weakness of this study is that its generalisability depends on classifications by the researchers, which are to a degree subjective. Our study tried to minimise this through setting out clear criteria for categorizing the title and abstract of each study. We also tried to minimise subjectivity by the using a well accepted statistical method of comparing the extent of consensus of health professional opinions, and by processes for the researchers to make independent judgments on classification.

It is also true that titles and abstracts may not accurately reflect the whole of text of a published article, where findings are fully laid out. A full content analysis of the articles would be preferable, but is beyond the scope of this study. Furthermore the abstract of an article in a medical journal may

be all that is read of the paper,<sup>106</sup> emphasizing the importance of it accurately summarising the study and research findings. Titles and abstracts are likely to be an important source of information for health professionals keeping up with the literature in the field. Many of those in busy practice do not have time to fully evaluate the literature on infant feeding.

Further research could survey a wider range of health professionals or researchers in this field, as well as examine a wider range of information sources that are utilized by health professionals for their ongoing learning. Comparison of research summaries in the scientific literature with that in the popular media would also be useful to assess the extent of any disconnect between research findings and infant feeding messages in the wider public domain. Finally, there is a need to scrutinize whether a predominant practice of treating formula feeding as the cultural and biological norm rather than as the feeding intervention affects research design, findings, and interpretation, and whether this in turn influences policy positions of health professional bodies or governments.

It is important that health and medical journals and other sources of information for health professionals accurately and efficiently communicate information on latest research findings on the health implications of premature weaning, not least to challenge the erroneous beliefs of many that formula feeding is little different from breastfeeding in its effect on health. Health professionals who have easy access to clear and accurate information and are more knowledgeable about the importance of breastfeeding are more likely to be motivated and able to convincingly promote it in keeping with their professional responsibilities. Our analysis of the titles and abstracts of a small but structured sample of scientific research on the health importance of breastfeeding has shown that journals may not currently provide health professionals with quick and ready access to the information they need to guide their practice and advice to new mothers. We found that, even where a study shows artificial feeding increases health risks, journal titles and abstracts systematically fail to state findings in language that link artificial infant feeding to increased morbidity. Indeed, in

many cases, the research title or abstracts misled readers by implicitly associating breastfeeding with the illness or disease. Formula feeding is rarely named as a risk factor for morbidity. Furthermore, most of the cited papers do not take breastfeeding as the norm, either in the design of research, or in the evaluation and presentation of results. If exclusive breastfeeding was the norm against which other methods are measured, breastfeeding would not be 'protective' and breastfed infants would not enjoy 'lower risks of ill health'; they would instead be referred to as 'normal', while formula fed infants are in fact 'exposed' to increased risk of poor health and development. Research is needed on a wider sample to establish if this pattern is generalized. If the literature available to health professionals is ambiguous about whether breastfeeding is 'protective' or a 'exposure' variable for health risk, they and the public may even wrongly believe that breastfeeding increases rather than decreases risk of certain illness or disease. Neither mothers nor their health professional advisors can exercise informed choice on infant feeding in such circumstances. Vigilance and diligence is needed to ensure that researchers accurately communicate their research findings about the health risks of artificial infant feeding, and consider implications for research design of treating breastfeeding as the intervention rather than the norm. Health practitioners seeking information on infant feeding choices need to be aware of potentially misleading titles and abstracts in journals.

## REFERENCES

- 1 Ip S, Mei Chung MPH, et al. Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries. AHRQ Publication No. 07-E007 Boston, Massachusetts: Tufts-New England Medical Center Evidence-Based Practice Center, 2007.
- 2 Horta BL, Bahl R, et al. Evidence on the long term effects of breastfeeding: systematic review and meta analyses. Geneva: World Health Organisation, 2007.
- 3 World Health Assembly (Fifty Fourth). Infant and Young Child Nutrition: Resolution 54.2., Geneva, May, 2001.
- 4 American Academy of Pediatrics. Breastfeeding Policy of American Academy of Pediatrics. *Pediatrics* 1997; 100:1035-1039.
- 5 Brodribb W, Fallon T. Health professionals and breastfeeding - knowledge, attitudes and beliefs. *Topics in Breastfeeding, Lactation Resource Centre (Australia Nursing Mothers), Set XVII, November 2005.*
- 6 Renfrew MJ, McFadden A, et al. Addressing the learning deficit in breastfeeding: strategies for change. *Matern Child Nutr* 2006; 2:239-44.
- 7 McFadden A, Renfrew MJ, et al. Assessing learning needs for breastfeeding: setting the scene. *Maternal & Child Nutrition* 2006; 2:196-203.
- 8 Wright AL, Holberg CJ, et al. Relationship of infant feeding to recurrent wheezing at age 6 years. *Arch Pediatr Adolesc Med* 1995; 149:758-63.
- 9 Tryggvadottir L, Tulinius H, et al. Breastfeeding and reduced risk of breast cancer in an Icelandic cohort study. *Am J Epidemiol* 2001; 154:37-42.
- 10 Toschke AM, Vignerova J, et al. Overweight and obesity in 6- to 14-year-old Czech children in 1991: protective effect of breast-feeding. *J Pediatr* 2002; 141:764-9.
- 11 Takala AK, Eskola J, et al. Risk factors of invasive Haemophilus influenzae type b disease among children in Finland. *J Pediatr* 1989; 115:694-701.
- 12 Stettler N, Zemel BS, et al. Infant weight gain and childhood overweight status in a multicenter, cohort study. *Pediatrics* 2002; 109:194-9.
- 13 Smulevich VB, Solionova LG, et al. Parental occupation and other factors and cancer risk in children: II. Occupational factors. *Int J Cancer* 1999; 83:718-22.
- 14 Singhal A, Farooqi IS, et al. Early nutrition and leptin concentrations in later life. *Am J Clin Nutr* 2002; 75:993-9.
- 15 Scragg LK, Mitchell EA, et al. Evaluation of the cot death prevention programme in South Auckland. *N Z Med J* 1993; 106:8-10.
- 16 Schanler RJ, Shulman RJ, et al. Feeding strategies for premature infants: beneficial outcomes of feeding fortified human milk versus preterm formula. *Pediatrics* 1999; 103:1150-7.
- 17 Schanler RJ. The use of human milk for premature infants. *Pediatr Clin North Am* 2001; 48:207-19.

- 18 Saarinen UM. Prolonged breastfeeding as prophylaxis for recurrent otitis media. *Acta Paediatr Scand* 1982; 71:567-571.
- 19 Rosenblatt KA, Thomas DB. Lactation and the risk of epithelial ovarian cancer. The WHO Collaborative Study of Neoplasia and Steroid Contraceptives. *Int J Epidemiol* 1993; 22:192-7.
- 20 Reynolds A. Breastfeeding and brain development. *Pediatr Clin North Am* 2001; 48:159-71.
- 21 Rao MR, Hediger ML, et al. Effect of breastfeeding on cognitive development of infants born small for gestational age. *Acta Paediatr* 2002; 91:267-74.
- 22 Popkin BM, Adair L, et al. Breast-feeding and diarrheal morbidity. *Pediatrics* 1990; 86:874-82.
- 23 Pisacane A, Graziano L, et al. Breast-feeding and urinary tract infection [see comments]. *J Pediatr* 1992; 120:87-9.
- 24 Pettitt DJ, Forman MR, et al. Breastfeeding and incidence of non-insulin-dependent diabetes mellitus in Pima Indians [see comments]. *Lancet* 1997; 350:166-8.
- 25 Perez-Bravo F, Carrasco E, et al. Genetic predisposition and environmental factors leading to the development of insulin-dependent diabetes mellitus in Chilean children. *J Mol Med* 1996; 74:105-9.
- 26 Paton LM, Alexander JL, et al. Pregnancy and lactation have no long-term deleterious effect on measures of bone mineral in healthy women: a twin study. *Am J Clin Nutr* 2003; 77:707-14.
- 27 Paradise JL, Elster BA, et al. Evidence in infants with cleft palate that breast milk protects against otitis media. *Pediatrics* 1994; 94:853-60.
- 28 Owen M, Baldwin CD, et al. Relation of infant feeding practices, cigarette smoke exposure and group child care to the onset and duration of otitis media with effusion in the first two years of life. *J Pediatr* 1993; 123:702-11.
- 29 Owen CG, Whincup PH, et al. Infant feeding and blood cholesterol: a study in adolescents and a systematic review. *Pediatrics* 2002; 110:597-608.
- 30 Oddy WH, Sly PD, et al. Breast feeding and respiratory morbidity in infancy: a birth cohort study. *Arch Dis Child* 2003; 88:224-8.
- 31 Oddy WH, Peat JK, et al. Maternal asthma, infant feeding, and the risk of asthma in childhood. *J Allergy Clin Immunol* 2002; 110:65-7.
- 32 Oddy WH, Holt PG, et al. Association between breast feeding and asthma in 6 year old children: findings of a prospective birth cohort study. *Bmj* 1999; 319:815-9.
- 33 Newcomb PA, Storer BE, et al. Lactation and a reduced risk of premenopausal breast cancer. *N Engl J Med* 1994; 330:81-7.
- 34 Mosko S, Richard C, et al. Maternal sleep and arousals during bedsharing with infants. *Sleep* 1997; 20:142-50.
- 35 Mosko S, Richard C, et al. Infant arousals during mother-infant bed sharing: implications for infant sleep and sudden infant death syndrome research. *Pediatrics* 1997; 100:841-9.
- 36 Mortensen EL, Michaelsen KF, et al. The association between duration of breastfeeding and adult intelligence. *Jama* 2002; 287:2365-71.

- 37 Mitchell EA, Taylor BJ, et al. Four modifiable and other major risk factors for cot death: the New Zealand study [see comments]. *J Paediatr Child Health* 1992; 28:S3-8.
- 38 McVea KL, Turner PD, et al. The role of breastfeeding in sudden infant death syndrome. *J Hum Lact* 2000; 16:13-20.
- 39 Marild S, Hansson S, et al. Protective effect of breastfeeding against urinary tract infection. *Acta Paediatr* 2004; 93:164-8.
- 40 Lucas A, Morley R, et al. Randomised trial of early diet in preterm babies and later intelligence quotient. *Bmj* 1998; 317:1481-7.
- 41 Lucas A, Cole TJ. Breast milk and neonatal necrotising enterocolitis [see comments]. *Lancet* 1990; 336:1519-23.
- 42 Lopez-Alarcon M, Villalpando S, et al. Breast-feeding lowers the frequency and duration of acute respiratory infection and diarrhea in infants under six months of age. *J Nutr* 1997; 127:436-43.
- 43 Lopez JM, Gonzalez G, et al. Bone turnover and density in healthy women during breastfeeding and after weaning. *Osteoporos Int* 1996; 6:153-9.
- 44 Lee SY, Kim MT, et al. Effect of lifetime lactation on breast cancer risk: a Korean women's cohort study. *Int J Cancer* 2003; 105:390-3.
- 45 Kramer MS, Guo T, et al. Infant growth and health outcomes associated with 3 compared with 6 mo of exclusive breastfeeding. *Am J Clin Nutr* 2003; 78:291-5.
- 46 Kostraba JN, Cruickshanks KJ, et al. Early exposure to cow's milk and solid foods in infancy, genetic predisposition, and risk of IDDM. *Diabetes* 1993; 42:288-95.
- 47 Jernstrom H, Lubinski J, et al. Breast-feeding and the risk of breast cancer in BRCA1 and BRCA2 mutation carriers. *J Natl Cancer Inst* 2004; 96:1094-8.
- 48 Jacobson SW, Chiodo LM, et al. Breastfeeding effects on intelligence quotient in 4- and 11-year-old children. *Pediatrics* 1999; 103:e71.
- 49 Istre GR, Conner JS, et al. Risk factors for primary invasive Haemophilus influenzae disease: increased risk from day care attendance and school-aged household members. *J Pediatr* 1985; 106:190-5.
- 50 Hylander MA, Strobino DM, et al. Association of human milk feedings with a reduction in retinopathy of prematurity among very low birthweight infants. *J Perinatol* 2001; 21:356-62.
- 51 Hylander MA, Strobino DM, et al. Human milk feedings and infection among very low birth weight infants. *Pediatrics* 1998; 102:E38.
- 52 Howie PW, Forsyth JS, et al. Protective effect of breastfeeding against infection. *British Medical Journal* 1990; 300:11-16.
- 53 Horwood LJ, Fergusson DM. Breastfeeding and later cognitive and academic outcomes. *Pediatrics* 1998; 101:E9.
- 54 Horwood LJ, Darlow BA, et al. Breast milk feeding and cognitive ability at 7-8 years. *Arch Dis Child Fetal Neonatal Ed* 2001; 84:F23-7.
- 55 Horne RS, Parslow PM, et al. Respiratory control and arousal in sleeping infants. *Paediatr Respir Rev* 2004; 5:190-8.



- 56 Heinig MJ. Host defense benefits of breastfeeding for the infant. Effect of breastfeeding duration and exclusivity. *Pediatr Clin North Am* 2001; 48:105-23, ix.
- 57 Grummer-Strawn LM, Mei Z. Does breastfeeding protect against pediatric overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. *Pediatrics* 2004; 113:e81-6.
- 58 Gillman MW, Rifas-Shiman SL, et al. Risk of overweight among adolescents who were breastfed as infants. *Jama* 2001; 285:2461-7.
- 59 Gerstein HC. Cow's milk exposure and type I diabetes mellitus. A critical overview of the clinical literature. *Diabetes Care* 1994; 17:13-9.
- 60 Gdalevich M, Mimouni D, et al. Breast-feeding and the risk of bronchial asthma in childhood: a systematic review with meta-analysis of prospective studies. *J Pediatr* 2001; 139: .
- 61 Ford RP, Taylor BJ, et al. Breastfeeding and the risk of sudden infant death syndrome. *Int J Epidemiol* 1993; 22:885-90.
- 62 Feldman R, Eidelman AI. Direct and indirect effects of breast milk on the neurobehavioral and cognitive development of premature infants. *Dev Psychobiol* 2003; 43:109-19.
- 63 Enger SM, Ross RK, et al. Breastfeeding experience and breast cancer risk among postmenopausal women. *Cancer Epidemiol Biomarkers Prev* 1998; 7:365-9.
- 64 Duncan B, Ey J, et al. Exclusive breastfeeding for at least 4 months protects against otitis media. *Journal of Pediatrics* 1993; 91:867-72.
- 65 Duncan B, Ey J, et al. Exclusive breast-feeding for at least 4 months protects against otitis media. *Pediatrics* 1993; 91:867-72.
- 66 Dewey KG, Heinig MJ, et al. Differences in morbidity between breast-fed and formula-fed infants. *J Pediatr* 1995; 126:696-702.
- 67 Dewey KG, Heinig MJ, et al. Breast-fed infants are leaner than formula-fed infants at 1 y of age: the DARLING study. *Am J Clin Nutr* 1993; 57:140-5.
- 68 Davis MK. Review of the evidence for an association between infant feeding and childhood cancer. *Int J Cancer Suppl* 1998; 11:29-33.
- 69 Cumming RG, Kleinberg RJ. Breastfeeding and other reproductive factors and the risk of hip fractures in elderly women. *Int J Epidemiology* 1993; 22:684-691.
- 70 Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. *Lancet* 2002; 360:187-95.
- 71 Cochi SL, Fleming DW, et al. Primary invasive Haemophilus influenzae type b disease: a population- based assessment of risk factors. *J Pediatr* 1986; 108:887-96.
- 72 Chulada PC, Arbes SJ, Jr., et al. Breast-feeding and the prevalence of asthma and wheeze in children: analyses from the Third National Health and Nutrition Examination Survey, 1988-1994. *J Allergy Clin Immunol* 2003; 111:328-36.
- 73 Chen A, Rogan WJ. Breastfeeding and the risk of postneonatal death in the United States. *Pediatrics* 2004; 113:e435-9.

- 74 Blaymore Bier JA, Oliver T, et al. Human milk reduces outpatient upper respiratory symptoms in premature infants during their first year of life. *J Perinatol* 2002; 22:354-9.
- 75 Bier JA, Oliver T, et al. Human milk improves cognitive and motor development of premature infants during infancy. *J Hum Lact* 2002; 18:361-7.
- 76 Bhandari N, Bahl R, et al. Effect of community-based promotion of exclusive breastfeeding on diarrhoeal illness and growth: a cluster randomised controlled trial. *Lancet* 2003; 361:1418-23.
- 77 Bener A, Denic S, et al. Longer breast-feeding and protection against childhood leukaemia and lymphomas. *Eur J Cancer* 2001; 37:234-8.
- 78 Beaudry M, Dufour R, et al. Relation between infant feeding and infections during the first six months of life. *J Pediatr* 1995; 126:191-7.
- 79 Batstra L, Neeleman J, et al. Can breast feeding modify the adverse effects of smoking during pregnancy on the child's cognitive development? *J Epidemiol Community Health* 2003; 57:403-4.
- 80 Bachrach VR, Schwarz E, et al. Breastfeeding and the risk of hospitalization for respiratory disease in infancy: a meta-analysis. *Arch Pediatr Adolesc Med* 2003; 157:237-43.
- 81 Armstrong J, Reilly JJ. Breastfeeding and lowering the risk of childhood obesity. *Lancet* 2002; 359:2003-4.
- 82 Arenz S, Ruckerl R, et al. Breast-feeding and childhood obesity--a systematic review. *Int J Obes Relat Metab Disord* 2004; 28:1247-56.
- 83 Aniansson G, Alm B, et al. A prospective cohort study on breastfeeding and otitis media in Swedish infants. *Pediatr Infect Dis J* 1994; 13:853-60.
- 84 Anderson JW, Johnstone BM, et al. Breast-feeding and cognitive development: a meta-analysis [see comments]. *Am J Clin Nutr* 1999; 70:525-35.
- 85 Amin SB, Merle KS, et al. Brainstem maturation in premature infants as a function of enteral feeding type. *Pediatrics* 2000; 106:318-22.
- 86 Alm B, Wennergren G, et al. Breast feeding and the sudden infant death syndrome in Scandinavia, 1992-95. *Arch Dis Child* 2002; 86:400-2.
- 87 American Academy of Paediatrics (AAP). Policy Statement: Breastfeeding and the Use of Human Milk. *Pediatrics* 2005; 115:496-506.
- 88 Wiessinger D. Watch your language. *Journal of Human Lactation* 1996; 12:1-4.
- 89 Haynes SG. National Breastfeeding Awareness Campaign Results Babies Were Born To Be Breastfed! , Academy of Breastfeeding Medicine, Niagara Falls New York, 2006.
- 90 Hannan A, Li R, et al. Regional variation in public opinion about breastfeeding in the United States. *J Hum Lact* 2005; 21:284-8.
- 91 Krogstrand KS, Parr K. Physicians ask for more problem-solving information to promote and support breastfeeding. *J Am Diet Assoc* 2005; 105:1943-7.
- 92 Pascoe JM, Pletta K, et al. Best start breastfeeding promotion campaign. *Pediatrics* 2002; 109:170.

- 93 Hillenbrand KM, Larsen PG. Effect of an educational intervention about breastfeeding on the knowledge, confidence, and behaviors of pediatric resident physicians. *Pediatrics* 2002; 110:e59.
- 94 Spear HJ. Nurses' attitudes, knowledge, and beliefs related to the promotion of breastfeeding among women who bear children during adolescence. *J Pediatr Nurs* 2004; 19:176-83.
- 95 Bagwell JE, Kendrick OW, et al. Knowledge and attitudes toward breast-feeding: Differences among dietitians, nurses, and physicians working with WIC clients. *Journal of the American Dietetic Association* 1993; 93:801-804.
- 96 Lowe T. Breastfeeding: attitudes and knowledge of health professionals. *Aust Fam Physician* 1990; 19:392, 395-6, 398.
- 97 Karipis TA, Spicer M. A survey of pediatric nurses' knowledge about breastfeeding. *J Pediatr Nurs* 1999; 14:193-200.
- 98 Schanler RJ, O'Connor KG, et al. Pediatricians' Practices and Attitudes Regarding Breastfeeding Promotion. *Pediatrics* 1999; 103:e35-.
- 99 Howard CR, Schaffer SJ, et al. Attitudes, practices, and recommendations by obstetricians about infant feeding. *Birth* 1997; 24:240-6.
- 100 Freed GL, Clark SJ, et al. National assessment of physicians' breast-feeding knowledge, attitudes, training, and experience. *Jama* 1995; 273:472-6.
- 101 Williams EL, Hammer LD. Breastfeeding attitudes and knowledge of pediatricians-in-training. *Am J Prev Med* 1995; 11:26-33.
- 102 Hellings P, Howe C. Assessment of breastfeeding knowledge of nurse practitioners and nurse-midwives. *J Midwifery Womens Health* 2000; 45:264-70.
- 103 Hellings P, Howe C. Breastfeeding knowledge and practice of pediatric nurse practitioners. *J Pediatr Health Care* 2004; 18:8-14.
- 104 Cantrill RM, Creedy DK, et al. An Australian study of midwives' breast-feeding knowledge. *Midwifery* 2003; 19:310-7.
- 105 Register N, Eren M, et al. Knowledge and attitudes of pediatric office nursing staff about breastfeeding. *J Hum Lact* 2000; 16:210-5.
- 106 International Committee of Medical Journal Editors (ICMJE). Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. 2006; Accessed 1 November 2007 2007. [www.ICMJE.org](http://www.ICMJE.org)

**APPENDIX A: TITLES**

- 1 Breast feeding and the sudden infant death syndrome in Scandinavia, 1992-95.
- 2 Brainstem maturation in premature infants as a function of enteral feeding type.
- 3 Breast-feeding and cognitive development: a meta-analysis [see comments].
- 4 A prospective cohort study on breastfeeding and otitis media in Swedish infants.
- 5 Breast-feeding and childhood obesity--a systematic review.
- 6 Breastfeeding and lowering the risk of childhood obesity.
- 7 Breastfeeding and the risk of hospitalization for respiratory disease in infancy: a meta-analysis.
- 8 Can breast feeding modify the adverse effects of smoking during pregnancy on the child's cognitive development?
- 9 Relation between infant feeding and infections during the first six months of life.
- 10 Longer breast-feeding and protection against childhood leukemia and lymphomas.  
Effect of community-based promotion of exclusive breastfeeding on diarrhoeal illness and growth: a cluster randomised  
11 controlled trial.
- 12 Human milk improves cognitive and motor development of premature infants during infancy.
- 13 Human milk reduces outpatient upper respiratory symptoms in premature infants during their first year of life.
- 14 Breastfeeding and the risk of post neonatal death in the United States.  
Breast-feeding and the prevalence of asthma and wheeze in children: analyses from the Third National Health and Nutrition  
15 Examination Survey, 1988-1994.
- 16 Primary invasive Haemophilus influenzae type b disease: a population- based assessment of risk factors.  
Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries,  
17 including 50302 women with breast cancer and 96973 women without the disease.
- 18 Breastfeeding and other reproductive factors and the risk of hip fractures in elderly women.
- 19 Review of the evidence for an association between infant feeding and childhood cancer.
- 20 Breast-fed infants are leaner than formula-fed infants at 1 y of age: the DARLING study.
- 21 Differences in morbidity between breast-fed and formula-fed infants.
- 22 Exclusive breastfeeding for at least 4 months protects against otitis media.
- 23 Breastfeeding experience and breast cancer risk among postmenopausal women.
- 24 Direct and indirect effects of breast milk on the neurobehavioral and cognitive development of premature infants.
- 25 Breastfeeding and the risk of sudden infant death syndrome.
- 26 Breast-feeding and the risk of bronchial asthma in childhood: a systematic review with meta-analysis of prospective studies.

- 27 Cow's milk exposure and type I diabetes mellitus. A critical overview of the clinical literature.
- 28 Risk of overweight among adolescents who were breastfed as infants.  
Does breastfeeding protect against pediatric overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System.
- 29 and Prevention Pediatric Nutrition Surveillance System.
- 30 Host defense benefits of breastfeeding for the infant. Effect of breastfeeding duration and exclusivity.
- 31 Respiratory control and arousal in sleeping infants.
- 32 Breast milk feeding and cognitive ability at 7-8 years.
- 33 Breastfeeding and later cognitive and academic outcomes.
- 34 Protective effect of breastfeeding against infection.
- 35 Human milk feedings and infection among very low birth weight infants.
- 36 Association of human milk feedings with a reduction in retinopathy of prematurity among very low birthweight infants.  
Risk factors for primary invasive Haemophilus influenzae disease: increased risk from day care attendance and school-aged household members.
- 37 aged household members.
- 38 Breastfeeding effects on intelligence quotient in 4- and 11-year-old children.
- 39 Breast-feeding and the risk of breast cancer in BRCA1 and BRCA2 mutation carriers.
- 40 Early exposure to cow's milk and solid foods in infancy, genetic predisposition, and risk of IDDM.
- 41 Infant growth and health outcomes associated with 3 compared with 6 mo of exclusive breastfeeding.
- 42 Effect of lifetime lactation on breast cancer risk: a Korean women's cohort study.
- 43 Bone turnover and density in healthy women during breastfeeding and after weaning.  
Breast-feeding lowers the frequency and duration of acute respiratory infection and diarrhea in infants under six months of age.
- 44 age.
- 45 Breast milk and neonatal necrotising enterocolitis [see comments].
- 46 Randomised trial of early diet in preterm babies and later intelligence quotient.
- 47 Protective effect of breastfeeding against urinary tract infection.
- 48 The role of breastfeeding in sudden infant death syndrome.
- 49 Four modifiable and other major risk factors for cot death: the New Zealand study [see comments].
- 50 The association between duration of breastfeeding and adult intelligence.
- 51 Infant arousals during mother-infant bed sharing: implications for infant sleep and sudden infant death syndrome research.
- 52 Maternal sleep and arousals during bedsharing with infants.
- 53 Lactation and a reduced risk of premenopausal breast cancer.

- 54 Association between breast feeding and asthma in 6 year old children: findings of a prospective birth cohort study.
- 55 Maternal asthma, infant feeding, and the risk of asthma in childhood.
- 56 Breast feeding and respiratory morbidity in infancy: a birth cohort study.
- 57 Infant feeding and blood cholesterol: a study in adolescents and a systematic review.  
Relation of infant feeding practices, cigarette smoke exposure and group child care to the onset and duration of otitis media  
58 with effusion in the first two years of life.
- 59 Evidence in infants with cleft palate that breast milk protects against otitis media.
- 60 Pregnancy and lactation have no long-term deleterious effect on measures of bone mineral in healthy women: a twin study.  
Genetic predisposition and environmental factors leading to the development of insulin-dependent diabetes mellitus in  
61 Chilean children.
- 62 Breastfeeding and incidence of non-insulin-dependent diabetes mellitus in Pima Indians [see comments].
- 63 Breast-feeding and urinary tract infection [see comments].
- 64 Breast-feeding and diarrheal morbidity.
- 65 Effect of breastfeeding on cognitive development of infants born small for gestational age.
- 66 Breastfeeding and brain development.
- 67 Lactation and the risk of epithelial ovarian cancer. The WHO Collaborative Study of Neoplasia and Steroid Contraceptives.
- 68 Prolonged breastfeeding as prophylaxis for recurrent otitis media.
- 69 The use of human milk for premature infants.
- 70 Feeding strategies for premature infants: beneficial outcomes of feeding fortified human milk versus preterm formula.
- 71 Evaluation of the cot death prevention programme in South Auckland.
- 72 Early nutrition and leptin concentrations in later life.
- 73 Parental occupation and other factors and cancer risk in children: I. Study methodology and non-occupational factors.
- 74 Infant weight gain and childhood overweight status in a multicenter, cohort study.
- 75 Risk factors of invasive Haemophilus influenzae type b disease among children in Finland.
- 76 Overweight and obesity in 6- to 14-year-old Czech children in 1991: protective effect of breast-feeding.
- 77 Breastfeeding and reduced risk of breast cancer in an Icelandic cohort study.
- 78 Relationship of infant feeding to recurrent wheezing at age 6 years.

## ACERH Research Reports

| No. | Author/s  | Title  | Date           |
|-----|---|--|----------------|
| 1   | Julie P Smith and Mark Ellwood                        | Where does a mother's day go? Preliminary estimates from the Australian Time Use Survey of New Mothers   | July 2006      |
| 2   | James RG Butler and Alexandra A Sidorenko             | Coping with the challenges of population ageing: Policy considerations for private sector involvement in a private health security pillar in a universal health system in APEC economies | September 2007 |
| 3   | Agnes E Walker, James RG Butler and Stephen Colagiuri | Cost-benefit model system of chronic diseases in Australia to assess and rank prevention and treatment options - proposed approach   | February 2008  |

## ACERH Working Papers

| No. | Author/s  | Title  | Date          |
|-----|---|--|---------------|
| 1   | Luke B Connelly and H Shelton Brown, III                      | Lifetime fairness? Taxes, subsidies, age-based penalties and the price of private health insurance in Australia  | June 2008     |
| 2   | Francesco Paolucci, James RG Butler and Wynand PMM van de Ven | Subsidising private health insurance in Australia: Why, how, and how to proceed?   | October 2008  |
| 3   | Rasheda Khanam, Hong Son Nghiem and Luke B Connelly           | Child health and the income gradient: Evidence from Australia  | November 2008 |
| 4   | Julie P Smith, Mark D Dunstone and Megan E Elliott-Rudder     | 'Voldemort' and health professional knowledge of breastfeeding – do journal titles and abstracts accurately convey findings on differential health outcomes for formula fed infants? | December 2008 |

<This page is blank>



<This page is blank>

