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Economic evaluations of interventions to improve breastfeeding

Dr Julie P Smith

College of Medical and Health Sciences, ANU
julie.smith@anu.edu.au

Ingrid McKenzie

College of Medical and Health Sciences, ANU



THE UNIVERSITY OF
WESTERN AUSTRALIA



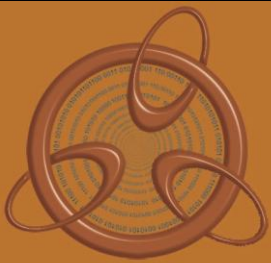
The economics of breastfeeding and the market for mothers' milk"

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Introduction

- **Breastfeeding is important to the health and development of infants.**
- **The WHO and NHMRC recommend exclusive breastfeeding to 6 months and complementary breastfeeding to 2 years and beyond.**
- **Increasingly governments are seeking to increase breastfeeding to reduce health system costs and achieve public policy goals for health and early childhood.**
- **Indication of ‘efficiency’ or cost effectiveness is crucial as breastfeeding promotion competes for resources within limited budgets**



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Economic evaluation of 'breastfeeding interventions'

- **Need for economic evaluation of interventions has been identified in systematic reviews**
 - How does increasing breastfeeding rank in 'efficiency' alongside other 'interventions' to improve health
 - What are the most efficient ways to redress risk factors for premature weaning?
- **Breastfeeding is cited internationally as one of the most cost effective 'interventions' in mother and child health**
 - But is breastfeeding an intervention? or is it the biological and physiological norm and premature weaning onto substitute foods the risk factor?



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Global and health policy context

- Millennium Development goals including maternal and child health
- Chronic disease concerns rising for developing as well as developed countries
- Renewed focus on nutrition including role in economic development (World Bank)
- Focus on exclusive breastfeeding with WHO focus on nutrition (Lancet series)

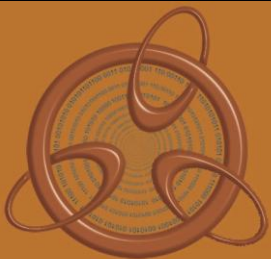


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Cost effectiveness and public health

- Smoking cessation/tobacco control
- Drug and alcohol abuse
- Vaccination of infants
- Nutrition ...



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Scope of 'interventions'

- **Includes policy interventions**
 - Labour market regulation
 - Regulation of marketing
- **Few effectiveness evaluations of this kind**
 - Increase in statutory paid maternity leave after 6 months known to increase breastfeeding duration by one month
 - WHO International Code on Marketing of Breastmilk Substitutes implemented in several countries, but this quasi-regulatory 'intervention' has only been evaluated at hospital or project level



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Criteria for evaluating economic evidence

- Is the perspective explicitly stated
 - Society, health system, health provider, mothers/families
- Opportunity costs – what else could be done with these resources? – marginal or incremental analysis specifying alternative to be evaluated
- Resources costs fully specified
- Measuring outcomes/effectiveness, including unintended outcomes
- Incorporate time preference and uncertainty – discounting and sensitivity analysis
- Also
 - Transparency & presentation
 - Affordability
 - Generalisability

Source: Drummond 1996; Walker and Fox-Rushby 2000; Rychetnik, Frommer, Hawe, Shiell 2004



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Breastfeeding: benefits and costs

Perspective	Benefits	Costs
Society and economy	Value of infant food production Environmental externalities/costs Health care costs for mother and baby Costs of mortality (lost lifetime production) Health, development and productive capacity of 'human capital'	Opportunity cost of women's time Costs of protecting breastfeeding from damaging institutional arrangements/practices and culture
Government, community, and health care services	Lower incidence and treatment costs of ill health and chronic disease of mothers and babies Reduced welfare/WIC expenditures on infant food for low income mothers Reduced abandonment/child abuse	Costs of maintaining institutions and training which enable breastfeeding Costs of 'marketing' breastfeeding in competition with artificial infant food producers
Industry sectors and employers	Healthier so more productive current and future workforce More jobs and profits in lactation support services More jobs and profits in breastfeeding related products	Employer costs of accommodating breastfeeding employees Fewer jobs and profits in health care services, agriculture and food processing and retailing
Family/household	Reduced health care costs for mother Reduced health care costs for baby Reduced food costs for baby Food security (quality/safety and availability) Child spacing	Reduced employment income of new mother Reduced mother time for unpaid work and care of other children Proximity of mother and infant Increased food needs of mother Sexual availability of mother/fewer babies
Mother	Reduced reproductive and other health risk Appropriate weight gain and loss during reproductive years Calming hormones and satisfaction of breastfeeding Child spacing Time savings for feeding of older infant	Proximity/'Tied down' by baby Reduced employment income of new mother Reduced leisure time of mother Reduced fertility Embarrassment at public breastfeeding
Baby	Time/development opportunities with mother Bonding hormones etc with mother Nutrition Health/survival Long term health and development and labour force productivity/earnings	Dependent on availability/proximity of mother



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AIM

- This study aims to provide new policy relevant information on improving breastfeeding outcomes by conducting a review of cost-effectiveness studies applicable to improving breastfeeding outcomes in developed country settings.

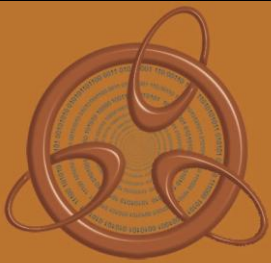


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Systematic reviews on effective interventions

- Workplaces/employment
- Commercial discharge packs/marketing
- BFHI
- Health professional education and training
- Antenatal and post natal breastfeeding education
- Peer counselling and breastfeeding support groups
- Milk banking



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METHOD

- We conducted a search via EconLit, Medline and Pubmed, Google Scholar, web of science and web of knowledge using keywords including breastfeeding or infant or child nutrition and cost or cost-effective or cost-effective analysis.
- We also examined recent systematic reviews of breastfeeding interventions to identify possibly relevant cost analyses or cost effectiveness studies.



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RESULTS

- We identified 12 papers which seemed from the title or abstracts to conduct cost effectiveness analyses of interventions with an outcome of increased breastfeeding.



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Table of results against criteria

Author	Date	Setting	Perspective	Costs	Effectiveness measure	Time preferences and discounting	Uncertainty and sensitivity analysis	Summary cost-effectiveness measure - incremental	Result	Transparency and presentation of data
Adam et al	2005	WHO subregions: sub-Saharan and South East Asia	Health system/funding agencies	Capital, personnel, equipment & materials	Breastfeeding rates	☹	☹	\$/DALY averted; ACER & ICER	\$/DALY averted = 6-10 ACER = 1 - 6 ICER = 1 - 6	☹
Chee	2002	Rural Ghana	Funding agency	Capital, personnel, training, materials, equipment. Volunteer costs excluded.	Exclusive breastfeeding rate (ExBR) in babies aged 0 - 6 months and timely initiation of breastfeeding (TIB)	☹	☹	Cost / behaviour change	Cost per behaviour change: Exclusive BF = \$34 Timely initiation of BF = \$45	☹
Chee	2004	Rural & urban Madagascar	Funding agency	Capital, personnel, training, materials, equipment. Volunteer costs excluded.	ExBR 0 - 6 months and TIB	☹	☹	Cost / behaviour change	Cost per behaviour change: Exclusive BF = \$10 Timely initiation of BF = \$2.33	☹
Chee	2006	Zambia	Funding agency	Capital, personnel, training, materials, equipment. Volunteer costs excluded.	ExBR 0 - 6 months and TIB	☹	☹	Cost / behaviour change	Cost per behaviour change: Exclusive BF = \$104 Timely initiation of BF = \$50	☹
Horton et al 1996	1996	Brazil, Mexico & Honduras	Health service provider	Capital, personnel, materials, equipment. Donated goods valued at market rates. Program maintenance only: no set up. Formula savings included	Exclusive and partial breastfeeding	☹	☹	\$/DALY gained (diarrhoea only)	1992 US\$2-\$19/DALY gained	☹
Paul et al	2004	USA	Health service funder	Service provision (no further detail provided)	Readmission or emergency visit 10 days postpartum	☹	☹	ICER for home nursing strategy	\$181.82 per admission/ED visit averted	☹
Pugh et al	2002	USA (low income urban women)	Health service funder and family	Personnel, time for feeding valued at mother's wage, formula costs included. Capital and admin costs excluded.	Exclusive and partial breastfeeding	☹	☹	Average cost per mother for intervention	Not calculated	☹
Stevens et al	2007	Canada	Family and health system	Caring time (excluding by mothers) and expenses (incl medications, supplies, equipment); hospital system costs as reported by mothers	Exclusive breastfeeding or breastmilk feeding at 7 days; jaundice or re-admission.	☹	☹	Cost per mother for experimental cf standard care	Not calculated	☹



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Intervention 'settings'

- Developing countries or developed countries
- Intervention setting
 - Hospitals
 - Health services
 - Community and peer support

Decisionmaking context/perspective of analysis

- Society
- Health services funder
- Hospital /health service provider
- Mother family etc
- Employers

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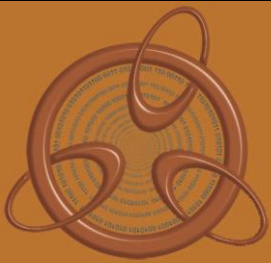
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Outcome variables and measurement:

- We found that infant health was often the outcome variable in developing countries
 - No maternal health or other outcomes
 - No development or other (injury) outcomes of infant
- Breastfeeding is intermediate variable used as outcome in developed country cost effectiveness studies
- Outcome variable
 - Diarrhoea, ARI
 - Breastfeeding - any, duration, exclusive

Despite evidence on links, no studies included:

- maternal health or other intended or unintended outcomes (employment, social acceptance) or
- infant (cognitive or emotional) development , injury, abuse, or obesity or chronic disease outcomes

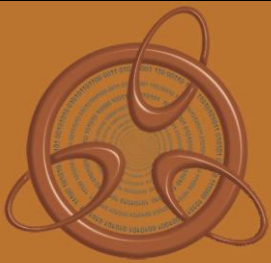


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Cost measures

- **Capital vs current costs**
- **Direct and indirect**
 - **Clinical costs**
 - **Salary costs**
 - **Staff training costs**
 - **Material and equipment costs**
 - **Out of pocket family costs**
 - **Volunteer time costs**
 - **Maternal time costs**



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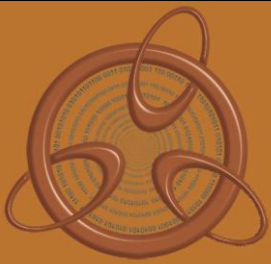
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Time preference and discounting

- Bringing costs and benefits to the same basis within the same time period
- Discount rates

Transparency and presentation

- **Results not comparing like with like**
 - Eg time periods for evaluation of effectiveness or of costs of intervention
 - Modelling of DALYs for different populations/samples



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Discussion

- Most relevant cost effectiveness studies and analyses are in developing country settings, from health services or health funder perspective.
- Perspective mainly interventions within a hospital or health services setting.
- Few meet quality criteria for economic evaluation studies
- Few collect data on all direct and indirect and capital as well as recurrent intervention costs
- None encompass all health and child development or maternal impacts of premature weaning or breastfeeding
- Critical flaw in studies is absence of health economic perspective – time as an input into health capital building by households
- Transferability an issue, but reducing premature weaning is highly cost effective (~ \$10-100)



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Conclusion

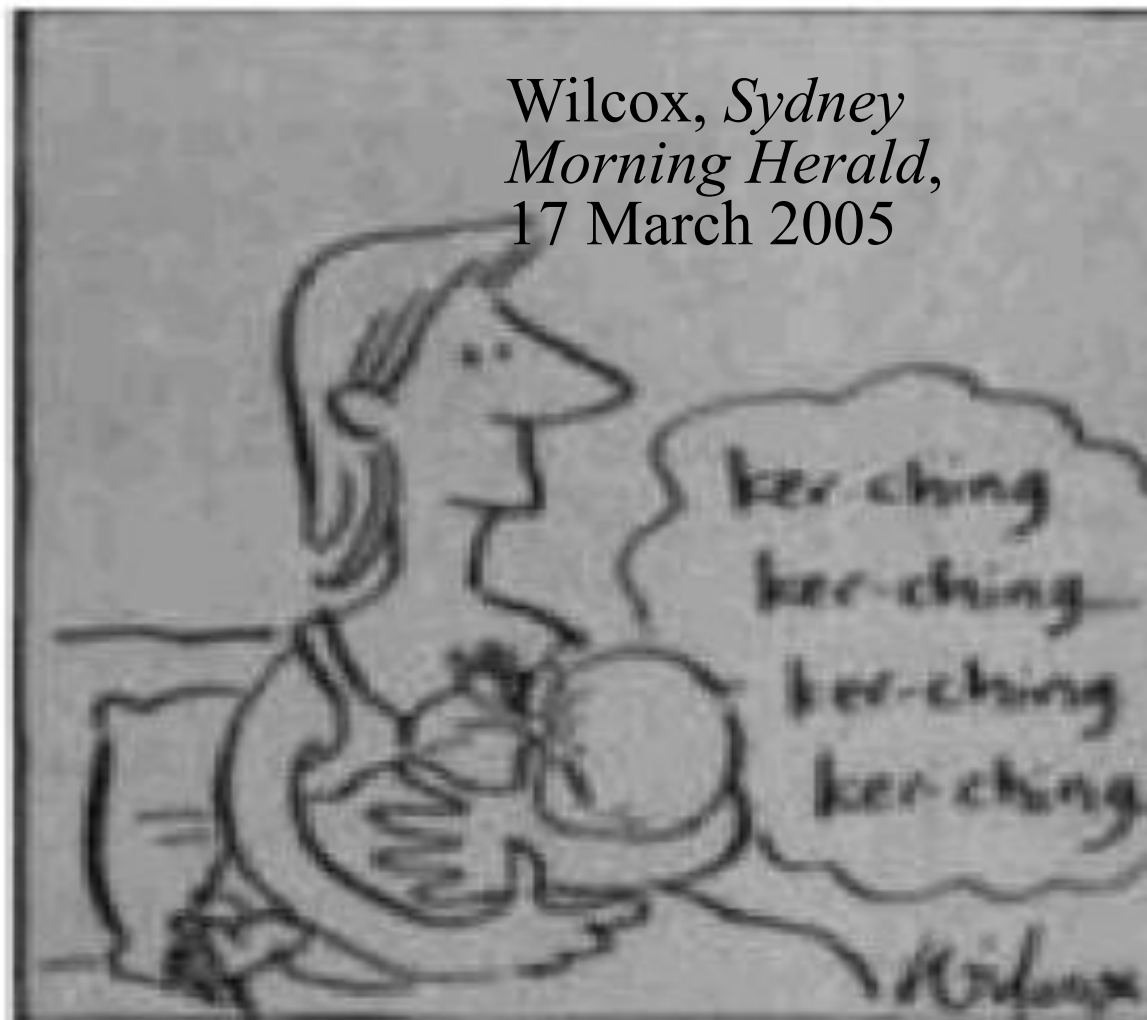
- Widely accepted that breastfeeding is among the most cost-effective interventions to improve child nutrition and health. Available evidence supports this.
- Few studies of cost effectiveness of breastfeeding or breastfeeding interventions to guide developed countries or chronic disease policy and management in developing countries
- Cost effective breastfeeding interventions are available in developed countries, eg BFHI.
- Some aspects of these analyses may be transferable to developed country conditions.
- Need economic evaluation of regulatory interventions (paid maternity leave, marketing of breastmilk substitutes)
- However, economic evaluations are lacking and those that exist are flawed as breastfeeding is not free,
 - maternal time is a significant cost (input into health production) and is rarely costed
- Need to make this time cost explicit in evaluations
 - interventions will fail if full costs are not accounted for in design – the mother and time she spends with her baby is the centre of the action!

Breastfeeding's the mother of all cash cows'

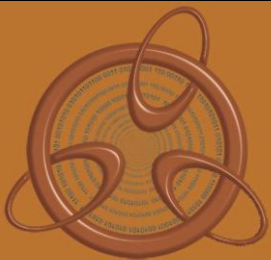


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Wilcox, *Sydney*
Morning Herald,
17 March 2005



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