

Breastfeeding promotion

Lumbwe Chola Wits University

Summary

This study undertakes a cost-benefit analysis of breastfeeding promotion among children 0-6 months in six African countries: Botswana, Cameroon, Equatorial Guinea, Gabon, South Africa and Somalia, which have the lowest rates of exclusive breastfeeding on the continent. The focus is on the costs and benefits arising from reduced morbidity and mortality from diarrhoea and pneumonia.

The study shows that increasing exclusive breastfeeding prevalence from baseline to 95% can avert 227,000 DALYs due to diarrhoea and 376,000 DALYs due to pneumonia annually in the selected countries. Approximately US\$1.9 billion can be gained every year in terms of health benefits and treatment and care seeking costs averted. The estimated benefit-cost ratio is 14.50 (for all six countries combined).

In this study we make the case for increasing breastfeeding prevalence, considering that conservative estimates of health benefits have been made. Other health benefits associated with increased breastfeeding were not considered, including lowered risks of chronic conditions later in life, such as obesity, high cholesterol, high blood pressure, diabetes, childhood asthma and childhood leukaemias. Further, we only consider costs and benefits in the first 6 months of birth, even though optimal breastfeeding can be beneficial for children up to 2 years of age and over their lifetime.

The results of this study transcend health and have wider socio-economic implications. In sub-Saharan Africa where the opportunity cost of resource use is high, breastfeeding promotion can free up much needed resources that can be used in other investments to improve livelihoods. To make this analysis even more meaningful, the study must be expanded to all sub-Saharan African countries, which have the most deaths of children under the age of five years.

Identification of the problem and its scope

More than 2.5 million children under the age of five years die every year in sub-Saharan Africa from preventable causes (UNICEF, 2019a). Approximately 70% of these deaths are of children under the age of one. Among the major causes of deaths are malaria, pneumonia and diarrhoea. Malnutrition is an underlying cause in approximately 45% of all child deaths.

Of all preventive interventions, optimal breastfeeding has the highest potential impact on child survival and globally can prevent more than 800,000 child deaths annually (Cesar GV et al, 2016). However, breastfeeding remains sub-optimal in many African countries. On the continent, the prevalence of exclusive breastfeeding is 43%.

Description of the intervention

This study undertakes a cost-benefit analysis of breastfeeding promotion in the first 6 months after birth. The WHO recommends: initiation of breastfeeding within the first hour of birth; exclusive breastfeeding for the first six months; and continued breastfeeding for two years. Interventions to promote breastfeeding are either facility-based or conducted at the community level and can take many forms including: peer support (paid or voluntary), breastfeeding support centres, antenatal education workshops, healthcare assistants, qualified breastfeeding counsellors/supporters, education/training for healthcare professionals. In many settings across Africa, the standard of care for breastfeeding promotion is facility based antenatal and postnatal care services, where pregnant women and lactating mothers are educated on the importance of breastfeeding. The effectiveness of facility-based breastfeeding promotion is however debatable (Lumbiganon P et al, 2016). Proponents thus suggest a combination of facility and community based interventions, which have been shown to be cost-effective (Chola L et al, 2015; Desmond C et al, 2008; Pugh LC et al, 2002).

In this study, we consider a community based breastfeeding promotion that encourages breastfeeding in pregnant and lactating mothers, using lay counsellors to deliver messages to mothers individually and in groups at various intervals in the first 6 months. This has been shown to be effective for increasing breastfeeding rates in low and middle income countries settings (Haroon S et al, 2013; Sinha B et al, 2015). The intervention could be delivered as a single community based intervention, or in integrated with other interventions delivered in the health system (Sinha B et al, 2017).

The analysis is done for six African countries with less than 60% continued breastfeeding (12-23 months) and less than 32% exclusive breastfeeding (0 to 6 months): Botswana, Cameroon, Equatorial Guinea, Gabon, Somalia, South Africa (UNICEF, 2019b). However, the analysis can be extended to any country, since the health benefits of breastfeeding are many and any magnitude of change in the level of breastfeeding can be beneficial to children, mothers and the wider community (Weimer JP, 2001).

In the analysis, exclusive breastfeeding rates are scaled up from baseline to 95% in the selected countries.

Identification of principal costs of the intervention

The main cost categories for the breastfeeding promotion intervention at community level include: Training; supervision; salaries; transportation; information, education and communication (IEC) materials; materials and supplies for community health workers. Several costing studies have been undertaken to estimate the costs of community interventions promoting breastfeeding, with estimated costs ranging between US\$139 to US\$230 per mother/child pair (Desmond C et al, 2008; Chola L et al, 2011; Nkonki L et al, 2014). These unit costs were applied to the countries in this study, adjusting for differences in gross national income (GNI). The following costs per woman were estimated: Botswana – US\$159; Cameroon – US\$64; Equatorial Guinea –

US\$158; Gabon – US\$154; South Africa – US\$137; Somalia – US\$54.

For the six countries included in this study, we estimated that breastfeeding promotion could cost approximately US\$180 million every year.

Identification of benefits

Principal benefits of increased breastfeeding prevalence include significantly reduced cost of illness as a result of the health benefits of breastfeeding; reduced deaths from acute respiratory infection and diarrhoea; lowered risks of chronic conditions later in life, such as obesity, high cholesterol, high blood pressure, diabetes, childhood asthma and childhood leukaemias (Lambeti et al, 2011; Cesar GV et al, 2016).

Benefits also accrue to mothers, including reduced risks of type 2 diabetes and breast, uterine and ovarian cancer (Chowdhury R et al, 2015). Approximately 20,000 annual deaths of breast cancer can be averted by breastfeeding (Cesar GV et al, 2016)

Increasing breastfeeding rates can thus lead to economic gains to the health system, resulting from reduced disease treatment costs; to families as result of averted out-of-pocket expenditures for care seeking; and to the economy in terms of increased productivity as work absenteeism related to childcare reduces (Weimer J, 2001). Other cost savings that may accrue to families include reduced expenditures on formula and replacement feeding supplies. Similarly, in-hospital feeding programmes will save on formula, bottles, glucose solution, oxytocin, etc.

This study estimates the economic benefits of breastfeeding, focusing on averted morbidity and mortality due to pneumonia and diarrhoea in six sub-Saharan African countries. Exclusive breastfeeding has a protective effect against diarrhoea and pneumonia. Among children 0-6 months, not breastfeeding results in excess diarrhoea mortality in comparison to exclusive breastfeeding [RR 10.52] and any breastfeeding [RR2.18], (Lamberti L et al, 2011). Pneumonia mortality is 14 time higher in children who are not breastfed, compared to those exclusively breastfed (Lamberti L et al, 2013).

We find that approximately US\$1.1 billion can be gained every year by scaling up exclusive breastfeeding rates to 95% among children 0-6 months old. The overall benefit-cost ratio (all countries combined) was estimated to be 14.50. The BCR for each country are: Botswana – 9.29; Cameroon – 10.51; Equatorial Guinea – 10.26; Gabon – 11.27; South Africa – 17.49; Somalia – 10.01.

Discussion

The health benefits estimated here are conservative, as breastfeeding is associated with health gains from morbidity and mortality with other conditions, including otitis media, meningitis, AIDs and lowered risks of chronic conditions later in life, such as obesity, high cholesterol, high blood pressure, diabetes, childhood asthma and childhood leukaemias. Furthermore, only costs and benefits in the first six months are considered, even though optimal breastfeeding can be beneficial for children up to 2 years of age and over their lifetime.

The study should be extended to all sub-Saharan Africa countries, since the health benefits of breastfeeding are many and any magnitude of change in the level of breastfeeding can be beneficial to children, mothers and society at large.

Thus further analyses can be undertaken estimate the economic implications of breastfeeding, considering wider health benefits over a lifetime time horizon in all sub-Saharan African countries. The study can be used to advocate for increased breastfeeding promotion in sub-Saharan Africa where the opportunity cost of resource use is high; and breastfeeding promotion can free up much needed resources to be used in other investments to improve livelihoods.

References

Cesar GV et al, 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*; [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)01024-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)01024-7/fulltext)

Chola L et al, 2011. Cost of individual peer counselling for the promotion of exclusive breastfeeding in Uganda. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3135543/>

Chola L et al, 2015. Cost-Effectiveness of Peer Counselling for the Promotion of Exclusive Breastfeeding in Uganda.

Chowdhury R et al, 2015. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. <https://onlinelibrary.wiley.com/doi/full/10.1111/apa.13102>

Desmond et al, 2008. Scaling-Up Exclusive Breastfeeding Support Programmes: The Example of KwaZulu-Natal; <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0002454>

Haroon S et al, 2013. Breastfeeding promotion interventions and breastfeeding practices: a systematic review. <https://www.ncbi.nlm.nih.gov/pubmed/24564836>

Lamberti LM et al, 2011. Breastfeeding and the risk for diarrhea morbidity and mortality. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)01024-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)01024-7/fulltext)

Lamberti LM et al, 2013. Breastfeeding for reducing the risk of pneumonia morbidity and mortality in children under two: a systematic literature review and meta-analysis. <https://www.ncbi.nlm.nih.gov/pubmed/24564728>

Lumbiganon P et al, 2016. Antenatal breastfeeding education for increasing breastfeeding duration; <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD006425.pub4/epdf/full>

Nkonki et al, 2014. Costs of Promoting Exclusive Breastfeeding at Community Level in Three Sites in South Africa. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3888383/>

Pugh LC et al, 2002. Breastfeeding duration, costs, and benefits of a support program for low-income breastfeeding women;

<https://www.ncbi.nlm.nih.gov/pubmed/12000411>

Sinha B et al, 2015. Interventions to improve breastfeeding outcomes: a systematic review and meta-analysis.

<https://www.ncbi.nlm.nih.gov/pubmed/26183031>

Sinha B et al, 2017. Integrated Interventions Delivered in Health Systems, Home, and Community Have the Highest Impact on Breastfeeding Outcomes in Low- and Middle-Income Countries.

<https://academic.oup.com/jn/article/147/11/2179S/4743208>

UNICEF, 2019a. UNICEF data – Under-five mortality. <https://data.unicef.org/topic/child-survival/under-five-mortality/>

UNICEF, 2019b. UNICEF data – Infant and young child feeding.

<https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding/>

Weimer JP, 2001. The Economic Benefits of Breastfeeding: A Review and Analysis.

http://www.aeped.es/sites/default/files/6-economic_benefits.pdf