

Viewpoint

The economic cost of not practicing optimal breastfeeding: a review

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Extract

Underfive child mortality is one of the world's most severe public health problems, and the developing world disproportionately bears the brunt of underfive child mortality. It is quite unlikely that developing countries will have sufficient resources, at least in the foreseeable future, to significantly reduce child mortality rates. Fortunately, optimal breastfeeding provides significant protection against child mortality, and it may well be the most practical policy intervention against child mortality in resource-constrained settings. However, the catch lies in the fact that despite the obvious benefits of breastfeeding, optimal breastfeeding is limited across the developing world. I have identified several causal mechanisms that contribute to nonoptimal breastfeeding practices. Additionally, I have drawn upon the literature that has estimated the economic cost of inadequate breastfeeding.

Keywords

Breast feeding; Early initiation of breast feeding; Child mortality; Health expenditures; Underfive mortality rate

Underfive child mortality is one of the world's most severe public health problems, and the developing world disproportionately bears the brunt of underfive child mortality. According to the most recent data, 66 out of 1,000 underfive children die yearly in low-income countries. The mortality rate in low-income countries is nearly ten times higher than that in high-income countries, which is approximately 6 out of 1,000 live births [1]. The developing world generally suffers from economic challenges arising primarily from the small industrial base, low exports, low per capita income, adverse terms of the balance of payment, low investment in human resources, poor physical infrastructure, widespread poverty and inequality, bludgeoning foreign debt, and institutional instability. In this situation, the resources required to significantly reduce child mortality seem to be a pipe dream for most of the least developed countries.

Fortunately, optimal breastfeeding provides significant protection against child mortality, and it may well be the most practical policy option in resource-constrained settings. Evidence from several countries in sub-Saharan Africa shows that breastfeeding within one hour after birth was associated with a 20% decrease in child mortality, and an additional month of breastfeeding reduces the risk of child mortality by 21% [2]. A study in Pakistan also found that breastfeeding and optimal birth interval were the most cost-effective interventions to reduce child mortality [3]. However, exclusive breastfeeding contributes to the most significant reduction in the risk of child mortality [4].

Contrary to the desired health outcomes of breastfeeding, suboptimal breastfeeding contributes to 1.4 million underfive deaths, which amounts to approximately 10% of all

underfive child mortality and the loss of 44 million disability-adjusted life years [5]. A study found that children not exclusively breastfed in the first three days of life had 13 times higher odds of mortality than those exclusively breastfed in the first three days of life [6]. A study in India found that the infant mortality rate among children fed formula milk was 9.6%, while the mortality rate among breastfed children was 0.68% [7].

Breastfeeding has several other health benefits. Some of the health benefits associated with breastfeeding include better respiratory health of the child, significantly reduced risk of diarrhea and malnutrition in childhood, appropriate healthy dietary behavior at the age of six months, and better cognitive development in later stages of life [5, 8].

Despite the apparent advantages of optimal breastfeeding, the practice of optimal breastfeeding is still inadequate. According to the most recent Demographic and Health Surveys (DHS) statistics, approximately 43.8% of children worldwide are exclusively breastfed in the first six months of their life [9]. The share of children exclusively breastfed in the first six months of their life is 50.8% in Pakistan, 67.5% in India, and 70.4% in Bangladesh. The highest exclusive breastfeeding rates in the first six months are in Rwanda and Burundi, which correspond to 84.4% and 87.9%, respectively. On the other hand, the age-appropriate breastfeeding rate is 55.4% worldwide. The age-appropriate breastfeeding rate is only 53.8% in Pakistan, 63.2% in India, and 82.1% in Bangladesh [9]. Interestingly, the world's highest age-appropriate breastfeeding rate occurs in Burundi (87.2%), indicating that Bangladesh has reached almost the top countries concerning age-appropriate breastfeeding rates.

Existing evidence has identified several factors associated with no breastfeeding or suboptimal breastfeeding. A study in Australia identified the factors associated with suboptimal breastfeeding being lower levels of education, obesity or overweight, smoking in urban areas, insufficient quantity of breastmilk, or some other breastfeeding issues, including latching issues and commuting for the job [10]. The previous morbidity of the child or the mother is a critical reason why women do not breastfeed the current child [11]. A study in China explored five reasons behind the noninitiation of breastfeeding, which included expected feelings of stress by the mother, difficulties in adjusting to new maternal responsibilities, concerns about the mother's physical issues, limited understanding of the risks of formula milk or other alternatives to breastfeeding, and the belief that interrupting breastfeeding midway is worse than not breastfeeding [12]. Conversely, vaginal delivery, delivery at the health institution, advice to the mother about breastfeeding and birth planning, the assistance of delivery by a trained person, and exposure to mass media were associated with early initiation of breastfeeding in India [13].

Compared to the health effects of breastfeeding, the economic benefits of breastfeeding are less recognized, and the economic cost of either no breastfeeding or optimal breastfeeding is generally underestimated. Several pathways can be inferred from the literature that link breastfeeding with desirable positive economic outcomes. Optimal breastfeeding, which includes early initiation of breastfeeding and exclusive breastfeeding, results in better health outcomes, including better cognitive skills, which are crucial for attaining higher levels of education and finding better employment opportunities that combine to ensure better living standards [5, 8]. In an alternative situation where a child is not optimally breastfed, it is only the child who is deprived of the above benefits. Suboptimal breastfeeding has a cumulative effect on the public health system. The nation's health system gets under pressure when more people with morbidities need health care, which, in turn, requires more significant health expenditure on the part of the government — and degraded quality of public health results in considerable opportunity cost reflected in lost productivity and missed opportunities.

A study in Indonesia found that the cost of not breastfeeding was estimated to be approximately 1.5 to 9.4 billion United States dollars (USD) annually [14]. The nonhealth gross domestic product (GDP) loss resulting from nonexclusive and late breastfeeding initiation accounted for almost USD 19.5 billion in sub-Saharan Africa [15]. Another study in sub-Saharan Africa found that only increasing exclusive breastfeeding by 10% is associated with savings of USD 1 billion annually [4].

The Baby-friendly Hospital Initiative (BFHI) is an emerging health intervention in the US and other countries aimed at improving maternal and child health and reducing healthcare expenditures by increasing breastfeeding. Since BFHI implementation requires a significant initial outlay, procuring the funds for establishing BFHI, especially in resource-constrained settings, is challenging. A study in the US and Mexico found that BFHI staff training costs ranged from USD 7.27-125.39 per birth in the US and purchasing power parity (PPP) 2.68-6.14 per birth in Mexico [16]. This study implies that staff training may cost significantly less in developing countries and can more than offset the expenditure related to child and maternal mortality and morbidity.

Since low birth weight and very preterm infants generally do not receive mothers' milk, poor households may find the costs associated with pumping maternal breast milk unaffordable [17]. It is presumed that offsetting the maternal costs of pumping breast milk through subsidies or other alternatives may sustain breastfeeding [17].

The above discussion clearly shows that optimal breastfeeding has clear economic benefits. However, these benefits cannot be realized unless some basic breastfeeding principles are observed, including early initiation of breastfeeding and exclusive birth feeding during the first six months and subsequent age-appropriate breastfeeding. The previous discussion also shows that investment in optimal breastfeeding practices has advantages that far outweigh the initial investment in public health systems promoting optimal breastfeeding. Therefore, it is almost a truism that among all competing investment methods, investment in optimal breastfeeding is the best security against maternal and child morbidity.

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References

- [1] World Bank. Mortality rate, under-5 (per 1,000 live births). 2022 [cited 01 November 2022]. Available from: <https://data.worldbank.org/indicator/sh.dyn.mort/>.
- [2] Ekholuenetale M, Barrow A. What does early initiation and duration of breastfeeding have to do with childhood mortality? Analysis of pooled population-based data in 35 sub-Saharan African countries. *Int Breastfeed J*. 2021;16(2021):91. <https://doi.org/10.1186/s13006-021-00440-x>
- [3] Amir-ud-Din R, Mahmood HZ, Abbas F, Muzammil M, Kumar R, Pongpanich S. Association of breast feeding and birth interval with child mortality in Pakistan: A cross-sectional study using nationally representative Demographic and Health Survey data. *BMJ Open*. 2022;12:e053196. <https://doi.org/10.1136/bmjopen-2021-053196>
- [4] Pretorius CE, Asare H, Kruger HS, Genuneit J, Siziba LP, Ricci C. Exclusive breastfeeding, child mortality, and economic cost in sub-Saharan Africa. *Pediatr*. 2021;147(3): e2020030643. <https://doi.org/10.1542/peds.2020-030643>
- [5] Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess (Full Rep)*. 2007;153:1-86.

- [6] Zhao M, Wu H, Liang Y, Liu F, Bovet P, Xi B. Breastfeeding and mortality under 2 years of age in sub-Saharan Africa. *Pediatr*. 2020;145(5):e20192209. <https://doi.org/10.1542/peds.2019-2209>
- [7] Alvarez-Uria G, Midde M, Pakam R, Bachu L, Naik PK. Effect of formula feeding and breastfeeding on child growth, infant mortality, and HIV transmission in children born to HIV-infected pregnant women who received triple antiretroviral therapy in a resource-limited setting: Data from an HIV cohort study in India. *Int Sch Res Notices*. 2012;763591. <https://doi.org/10.5402/2012/763591>
- [8] Perrine CG, Galuska DA, Thompson FE, Scanlon KS. Breastfeeding duration is associated with child diet at 6 years. *Pediatr*. 2014;134(Supplement_1):S50-5. <https://doi.org/10.1542/peds.2014-0646I>
- [9] STATcompiler. The DHS Program. 2022 [cited 01 November 2022]. Available from: statcompiler.com/en/.
- [10] Moss KM, Dobson AJ, Tooth L, Mishra, GD. Which Australian women do not exclusively breastfeed to 6 months, and why?. *J Hum Lact*. 2021;37(2):390-402. <https://doi.org/10.1177/0890334420929993>
- [11] Brahmbhatt H, Gray RH. Child mortality associated with reasons for non-breastfeeding and weaning: Is breastfeeding best for HIV-positive mothers?. *AIDS*. 2003;17(6):879-85. <https://doi.org/10.1097/00002030-200304110-00013>
- [12] Fei Y, Zhang Z-Y, Fu W-N, Wang L, Mao J. Why do first-time mothers not intend to breastfeed?—A qualitative exploratory study on the decision-making of non-initiation in Jingzhou, China. *BMC Pregnancy Childbirth*. 2022;22:183. <https://doi.org/10.1186/s12884-022-04494-5>
- [13] Forde I, Tripathi V. An analysis of factors associated with neonatal, post-neonatal and child mortality in Haiti, including breastfeeding as a time-dependent variable. *J Paediatr Child Health*. 2022;58(11):2023-33. <https://doi.org/10.1111/jpc.16142>
- [14] Siregar AYM, Pitriyan P, Hardiawan D, Zambrano P, Vilar-Compte M, Belismelis GMT, et al. The yearly financing need of providing paid maternity leave in the informal sector in Indonesia. *Int Breastfeed J*. 2021;16:17. <https://doi.org/10.1186/s13006-021-00363-7>
- [15] Pretorius CE, Asare H, Genuneit J, Kruger HS, Ricci C. Impact of breastfeeding on mortality in sub-Saharan Africa: A systematic review, meta-analysis, and cost-evaluation. *Eur J Pediatr*. 2020;179:1213-25. <https://doi.org/10.1007/s00431-020-03721-5>
- [16] Arslanian KJ, Vilar-Compte M, Teruel G, Lozano-Marrufo A, Rhodes EC, Hromi-Fiedler A, et al. How much does it cost to implement the Baby-Friendly Hospital Initiative training step in the United States and Mexico?. *PloS One*. 2022;17(9):e0273179. <https://doi.org/10.1371/journal.pone.0273179>
- [17] Johnson TJ, Meier PP, Schoeny ME, Bucek A, Janes JE, Kwiek JJ, et al. Study protocol for reducing disparity in receipt of mother's own milk in very low birth weight infants (ReDiMOM): A randomized trial to improve adherence to sustained maternal breast pump use. *BMC Pediatr*. 2022;22:27. <https://doi.org/10.1186/s12887-021-03088-y>