

“Delayed Breastfeeding Initiation Increases Risk of Neonatal Mortality” (2006), by Karen Edmond et al.

In March 2006, scientists from Ghana and the UK Karen Edmond, Charles Zandoh, Maria Quigley, Seeba Amenga-Etego, Seth Oqusi-Agyei, and Betty Kirkwood published their findings that early, consistent breastfeeding habits for mothers in Ghana resulted in better survival outcomes for their infants. The authors communicated those results in the paper “Delayed Breastfeeding Initiation Increases Risk of Neonatal Mortality,” or “Delayed Breastfeeding,” published in *The American Academy of Pediatrics*. “Delayed Breastfeeding” was one of the first studies to examine the connection between early, consistent breastfeeding habits and infant survival. The information detailed in “Delayed Breastfeeding” supported and helped promote the World Health Organization’s 2015 Breastfeeding Advocacy Initiative, which revealed the risks associated with avoiding breastfeeding for both mothers and infants in countries around the world.

In 2006, when the researchers published their study, the infant mortality rate in Ghana was 57.1 deaths per 1,000 live births. That statistic prompted researchers to investigate why Ghana’s infant mortality rate was higher than the world average of 43.4 deaths per 1,000 live births. The authors speculated that the feeding habits of new infants in Ghana may be the cause of mortality, and stated that many infants were fed milk from other mammals early on in infancy and were given formula made with unfiltered, unclean water. The authors hypothesized that those feeding habits were due to a lack of breastfeeding education. Milk from non-human mammals has a different nutritional composition than human breast milk, and unclean water can be tainted with bacteria or parasites. In their study, the authors correlated both of those habits with infant deaths.

In “Delayed Breastfeeding,” the authors specifically examined neonatal infant mortality rates in rural Ghana. They explain that the typical definition of neonatal infant death includes infant deaths between the ages of birth to one month. However, for the purposes of the study, the authors defined neonatal death as infant deaths between an infant’s second day to one month of age. The authors claim that they altered the definition because they could not collect reliable results on the effects of breastfeeding if the infant died within the first two days of life. Edwards, Zandoh, Quigley, Amenga-Etego, Oqusi-Agyei, and Kirkwood were mutually connected through affiliations with the Kintampo Health Research Centre, in Kintampo, Ghana, the Department of Epidemiology and Population Health at the London School of Hygiene and Tropical Medicine, in London, UK, and the National Perinatal Epidemiology Unit, located at Oxford University in Oxford, UK. The authors researched topics that included improving medical care in Ghana and reducing infant mortality around the world.

The authors organize “Delayed Breastfeeding” into four parts, including an introduction section, a methods section, a results section, and a discussion. In the introduction, the authors remark that little research has been done on possible links between infant mortality and breastfeeding in Ghana. In the methods section, the authors detail how they selected the women in the trial and how the authors followed up with the women to receive reliable information on the infants’ health and the women’s breastfeeding practices. The authors reveal the positive correlation between early, consistent breastfeeding habits and infant survival rate in the results section. In the discussion section, the authors suggest that because of the link they found between breastfeeding and infant survival in Ghana, health organizations should promote regulation of breastfeeding to prevent more infant deaths around the world.

In the introduction of “Delayed Breastfeeding,” the authors focus on the gap in preexisting research on infant mortality rates. They begin the paper by outlining the lack of research on infant mortality

in the neonatal stage, pointing out that that lack of research was disadvantageous because neonatal deaths account for over thirty-six percent of child deaths worldwide. In the introduction, the authors also state that while the United Nations and World Health Organization promote breastfeeding for overall infant health, little research had been done to correlate breastfeeding with neonatal mortality rates.

At the end of their introduction, the authors establish their goals for the study. First, the authors explain that they want to investigate any connection between whether women's habits of breastfeeding correlate with instances of neonatal death. The authors' second goal is to determine whether different types of breastfeeding carried different risks of neonatal infant mortality. In the parameters of their experiment, the authors define the different types of breastfeeding as exclusive, meaning the infant's sole food source is breast milk, predominant, meaning the infant almost always receives breast milk with other supplemental foods, and partial, meaning the infant does not always receive breast milk and may receive supplementation more often than breast milk. According to the authors, the infants who were not exclusively breastfed in the observational study were often given milk from other mammals such as goats or cows, were given water rather than milk, or were fed solid food in addition to or instead of breast milk. Next, the authors describe how they executed their study in the methods section.

The authors begin their methods section by stating that they selected the women they interviewed based on a study simultaneously occurring in Ghana. Researchers in the simultaneous Ghana study were examining the correlation between vitamin A distribution in women of childbearing age and the women's long-term health. The researchers of "Delayed Breastfeeding" obtained their data from participants in the vitamin A study. To collect data, researchers visited the women once every four weeks. Some of the surveyed women had infants and others did not. The researchers of the vitamin A study surveyed women in rural towns in Ghana between 1 July 2003 and 30 June 2004. After receiving approval from the necessary review boards, the authors received permission to offer questionnaires to the women being tested in the vitamin A study. The researchers of "Delayed Breastfeeding" collaborated with the researchers of the vitamin A study and attended monthly home visits with those researchers. If during one of the follow up visits, a woman disclosed that she had given birth within the preceding four weeks, the mothers were offered a questionnaire from the authors to assess overall labor outcomes and breastfeeding behavior. At the next four-week follow up visit, the authors of "Delayed Breastfeeding" issued another questionnaire to the mothers to assess the infants' survival during the neonatal period. The authors gathered their data from the results of those questionnaires.

In the second to final section of the paper, the authors discuss the results of their study. They indicate that there is a connection between early, consistent breastfeeding and infant survival rates. The authors gathered data on over 14,403 live births in the one-year span of their study. Out of those live births, 433 infants died within the neonatal period, which means that for every 1,000 infants born, approximately 30.1 had died. With regard to breastfeeding, the authors found that over seventy-one percent of infants engaged in breastfeeding by their third day of life, and that infants who did not get breastfed within the first three days of life died more often than those that did. The authors also found that infants who were exclusively breastfed had better survival outcomes than those who were either predominantly or partially breastfed. The team concluded their results section by asserting that early, exclusive breastfeeding exerted positive influences on neonatal survival rates in the rural population in Ghana.

In the discussion section of their paper, the authors assert that early breastfeeding could impact infant survival through four mechanisms. The first mechanism is mother-infant bonding. According to the first mechanism, infants who breastfeed early form a bond with their mothers that causes a higher rate of continuing breastfeeding throughout infancy, which the authors claim leads to better long-term survival outcomes for infants and children. The second mechanism is about the health risks associated with feeding infants non-human milk. According to the authors, non-human milk can disrupt an infant's gastrointestinal system, leading to poorer long-term health. Third, the authors detail the importance of colostrum, or the first few days' worth of breast milk, which is richer in antibodies and vitamins than breast milk produced after the first few days. The authors claim that without early breastfeeding, infants risk not getting colostrum, which may impact the

development of their immune system, putting the infants at higher risk for deadly diseases. Finally, the authors conclude their article by adding that the mother's body warmth when breastfeeding her infant may protect the infant from illnesses or death related to decreased body temperature. The authors recommended that global health organizations take those four mechanisms into account and promote breastfeeding for women around the world.

"Delayed Breastfeeding" influenced health campaigns across the globe. For example, in 2015, the United Nations International Child Emergency Fund, or UNICEF, in partnership with the World Health Organization, established a breastfeeding advocacy initiative that released a pamphlet citing the results reported in "Delayed Breastfeeding." In the four-page pamphlet, UNICEF details the benefits of early breastfeeding for infants, how they intend to educate different global populations on such benefits, and the risks associated with not breastfeeding an infant at all. The pamphlet revealed the risks associated with not breastfeeding for both mother and infant, referencing the results of "Delayed Breastfeeding." The pamphlet reiterates the "Delayed Breastfeeding" authors' point that early initiation of breastfeeding can significantly reduce infant mortality in the neonatal stage.

"Delayed Breastfeeding Initiation Increases Risk of Neonatal Mortality" communicated one of the first studies that linked early, exclusive breastfeeding with positive neonatal survival rates. As of 2018, "Delayed Breastfeeding" has been cited almost 1,000 times.

Sources

1. Edmond, Karen, Charles Zandoh, Maria Quigley, Seeba Amenga-Etego, Seth Owusu-Agyei, and Betty Kirkwood. "Delayed Breastfeeding Initiation Increases Risk of Neonatal Mortality." *Pediatrics* 117 (2006): 380-6.
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3. UNICEF and WHO. "Breastfeeding Advocacy Initiative: For the Best Start in Life." UNICEF, World Health Organization. http://www.who.int/nutrition/publications/infantfeeding/breastfeeding_advocacy_initiative_overview.pdf. (Accessed October 20, 2018).