

In the 1994 article ?The ?Kangaroo-Method? for Treating Low Birth Weight Babies in a Developing Country,? authors Nils Bergman and Agneta Jürisoo evaluate the effectiveness of the Kangaroo Care method in treating low birth weight infants at Manama Mission Hospital in Gwanda, Zimbabwe. Low birth weight infants face many medical complications. In developing countries, where the prevalence of low birth weight infants is highest, there is limited access to the technology or skilled personnel required to keep those infants alive. The Kangaroo Care method includes exclusive breastfeeding and skin-to-skin contact on the mother's chest to treat low birth weight infants. In ?The ?Kangaroo-Method? for Treating Low Birth Weight Babies in a Developing Country,? the authors demonstrate that the method is just as effective as conventional technological methods in treating low birth weight infants.

According to the World Health Organization, WHO, headquartered in Geneva, Switzerland, complications related to low birth weight cause between 60 and 80 percent of newborn deaths and are the leading causes of infant death in the world as of 2018. A low birth weight infant weighs less than 2500 grams, g, or 5.5 pounds. Premature birth, or birth before thirty-seven weeks of gestation [6], is often related to low birth weight. Complications related to low birth weight include an infant?s inability to maintain body temperature, difficulty breathing, trouble gaining weight, long term problems with brain function, and sometimes death.

As of 2018, approximately 15.5 percent of infants worldwide are born at a low birth weight, but almost all of those births occur in developing countries. In developing countries there are limited medical professionals and modern technology to manage the complications that can arise with low birth weight infants. As a result, over 19 million newborns die due to low birth weight each year in those countries. In Zimbabwe, the location of Bergman and Jürisoo?s study, the prevalence of low birth weight was calculated as high as 24 percent of births in 1994. Efforts to prevent the birth of low birth weight infants focus on improving care for the mother during pregnancy [7] by providing prenatal vitamins, treating infections, and encouraging better nutrition. However, because many pregnant women live in rural areas without access to prenatal care, physicians and hospital staff work to develop methods to care for low birth weight infants after they are born.

The authors of ?The ?Kangaroo-Method,?? suggest that one potential cause of the high death rate associated with low birth weight is limited access to conventional care and modern technology typically available in more developed nations. Conventional care for low birth weight usually involves placing infants in incubators to regulate their body temperature. It can also include other treatments like the use of nasogastric tubes which allow nurses to feed
infants breast milk through the infants' noses directly into their stomachs. Those treatments, although effective, are not available to most infants born in developing countries due to the high costs of technology and the lack of skilled healthcare providers. The Kangaroo Care method has been suggested as a simple, cost-effective way to treat low birth weight infants. In the article "The Kangaroo-Method," Bergman and Jürisoo state that their method of Kangaroo Care includes constant skin-to-skin contact where the infant is laid in a vertical position between the mother's breasts and exclusive breastfeeding where the infant only receives nutrients from the mother's milk.

Bergman and Jürisoo published "The Kangaroo-Method" in Tropical Doctor in 1994. The journal Tropical Doctor is written by and for health care providers working in low and middle income countries. Bergman was a physician, born in Sweden and raised in Zimbabwe. He referred to himself as a public health physician and focused much of his research on Kangaroo Care and skin to skin contact. Jürisoo was a midwife at Manama Mission Hospital who collaborated with Bergman while he was completing his research at that hospital.

In the introduction, Bergman and Jürisoo address the existing research on Kangaroo Care and describe the conditions of the hospital. The authors note that previous research evaluated Kangaroo Care in combination with conventional care or as a treatment initiated multiple days after birth. Their research, however, reviewed Kangaroo Care as its own treatment implemented immediately after birth. In the article, Bergman reports that when he arrived at Manama Mission Hospital in Zimbabwe in 1988, medical staff placed low birth weight infants in cots and used hot water bottles to maintain body temperature. The authors state that the survival rate was low and there was very little routine for infant care or feeding. The authors disclose that they developed their method to suit the limited resources of Manama Mission Hospital in Zimbabwe.

In the next section, the authors describe their methods and guidelines for mothers and infants who participated in their research. The authors state that mothers were expected to keep their infants in kangaroo position for twenty-four hours a day, except when mothers needed to bathe. They describe the kangaroo position as an infant placed skin-to-skin on the mother's
chest, with its head to the side under the mother's chin, and the infant's legs under the mother's breasts. Medical staff gave all infants a small hat to help them retain body heat, and wrapped the infants onto their mothers' chests with cloth. The authors state that they encouraged mothers to walk around during the day with the infant in kangaroo position, rather than remaining bedridden. In describing their methods, the authors state that they arranged lessons to teach the method to staff at rural health care centers surrounding the hospital so that Kangaroo Care could begin immediately after birth, but before the mother was able to bring her infant to Manama Mission Hospital for more intensive care.

In addition to the kangaroo position, the authors state that their method required mothers to breastfeed their infants immediately after birth and to breastfeed exclusively, rather than using formula or bottles. If nasogastric tubes were necessary for very low birth weight infants, nurses taught the mothers to implement nasogastric feeding independently, rather than staff completing the feedings. The authors argue that, by having mothers involved in their infants' care, they promoted mother-infant bonding. Although breastfeeding often improves infant immune systems, medical staff prescribed ten days of antibiotics to very low birth weight infants to prevent infections, a common cause of death in that weight group.

As the authors continue to detail their methods, they report that they recorded weight, general health, and feedings for later analysis. The authors state that they encouraged maternal involvement in their infants' care to increase morale and motivate mothers. Mothers kept infants in kangaroo position constantly until the infants weighed 2000 g. The staff discharged the infants from the hospital when they weighed more than 2500 g, or when the infants were no longer considered low birth weight.

Before introducing their research results, Bergman and Jürisoo include a section in which they address obstacles that arose during their study. The authors report that apnea, or a pause in breathing, is common for very low birth weight infants. During the study, the medical staff made attempts to manage episodes of apnea without removing the child from its mother's breasts unless it was completely necessary to resuscitate the infant. The authors state that another problem that often arises in premature and low birth weight infants is jaundice, a condition where the infant's liver is unable to efficiently filter out a bodily waste product called bilirubin. Bergman and Jürisoo state that staff managed jaundice by placing the mother and infant in direct sunlight for extended periods of time. Medical professionals use sunlight treatment because exposure to the light rays in sunlight breaks down bilirubin into a compound that human bodies can process. The last problem the authors state they encountered was the difficulty of keeping the mothers motivated during their hospital stay. According to several studies, mothers with sick infants often feel hopeless and unable to perform maternal tasks while in the hospital setting. The authors state that they attempted to improve maternal motivation by repeatedly emphasizing the mother's role in her child's care.

In the results section, the authors detail the trends they found in the 126 cases of infants born weighing under 2000 g. They provide figures that show a plot of gestational age and birth weight, home births, hospital births, and whether or not the infant survived. The first figure indicates that the majority of infant deaths occurred in lower birth weight and lower gestational age infants. The second figure compares birth weight and survival percentages between Kangaroo Care infants and infants who were treated at the same hospital before the start of the Kangaroo Care research. At all ages, the Kangaroo Care infants had higher survival rates.

In the final section of their article, Bergman and Jürisoo demonstrate that Kangaroo Care was
as effective at decreasing complications related to low birth weight as conventional care. The authors state that the survival rate of hospital-born, low birth weight infants increased from ten percent before Kangaroo Care, to fifty percent survival after method implementation. They exclude information about infants who were born in rural clinics and transferred to the hospital. The authors explain that when they excluded infant deaths within one week of birth, infant survival of hospital born infants with Kangaroo Care reached almost ninety-nine percent. According to the authors, infants who died within the first week may have required extensive care that was not available in the hospital.

The authors note that, prior to the study, the medical staff in Manama Mission Hospital expected the low birth weight infants to die and felt that there was almost no way to change the outcome. The authors write that as the hospital staff saw more infants survive, their confidence in their ability to care for low birth weight infants increased. Bergman and Jürisoo emphasize the community acceptance of the method as well, stating that the mothers often brought their infants back to the hospital to show hospital staff how their infants flourished.

Researchers throughout Africa, South America, Central America, and Asia cited the paper, "The 'Kangaroo-Method' for Treating Low Birth Weight Babies in a Developing Country," in subsequent studies regarding the impact of Kangaroo Care on mother-infant interaction and care. Other research began to directly compare incubator use and Kangaroo Care to further evaluate the claim that Kangaroo Care is an equivalent to conventional treatments for low birth weight infants. As of 2017, Kangaroo Care, referred to as Kangaroo Mother Care by the WHO, is a method of care featured in guidelines produced by the WHO.

Sources

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