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## The Significance and Effectiveness of Kangaroo Care for Premature Infants

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### Abstract

Kangaroo care maintains thermoregulation between infants and their mothers. This technique can also be called the human incubator method, reducing newborn morbidity and mortality at considerably lower costs of infrastructure or safe and reliable practicality for both health professionals and mothers. It has recently been revealed that kangaroo care helps to reduce mortality rates in preterm infants, stabilises heart rate, maintains body temperature, reduces the need for oxygen, positively affects weight gain and sleep duration, and assures early discharge. Kangaroo care also guarantees mother–infant commitment in the postnatal period. Despite the evidence for its reliability and efficiency, its practice still remains limited due to lack of qualified medical personnel and an inadequate care environment. Consequently, it can be suggested that primary care providers in newborn intensive care units promote kangaroo care practices by establishing an efficient care environment in order to improve medical results and enhance the care quality.

Keywords: Kangaroo care, premature newborn, neonatal intensive care unit, primary care, providers.

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## 1.Introduction

Premature births are a problem around the world, and more so in developing countries [1]. The World Health Organization defines infants as premature when they are born at less than 37 weeks of gestation or weigh less than 2,500 g [2, 3]. Premature infants experience many health problems. Premature infants are generally unable to regulate their body temperature and also suffer from cardiovascular and respiratory system problems [4, 5]. Premature infants also experience stressors in neonatal intensive care units such as bright light and painful invasive procedures [5].

Kangaroo care, known as skin-to-skin contact, is a supplementary practice that helps minimise negative effects of stressful stimuli on premature infants and initiate communication between mother and infant [3, 6, 7]. Kangaroo care is mostly used to protect and promote the health of premature infants and to establish mother–infant interaction [2, 4, 8]. It has been reported that, thanks to kangaroo care, early initiation and promotion of mother–infant attachment makes the adaptation between mother and infant easier [9]. Kangaroo care means putting the naked baby with a diaper on its mother’s or father’s bare chest in a face-to-face upright position to establish skin-to-skin contact [6, 10]. The name kangaroo care was inspired by the way a mother kangaroo holds her baby in her pouch. When mothers open their clothing to hold their babies on their chests, it makes something like a kangaroo pouch.

Kangaroo care was initiated by Dr. Edger Rey Sanabria in Bogotá, Colombia in 1978, because neonatal intensive care units were too crowded and resources were inadequate, although rates of mortality and morbidity were high for babies with very low birth weights [6, 10]. It is a current issue that kangaroo care should be considered very important due to its low cost, ease of application and positive effects on premature infants (Head 2014). Today in many hospitals, mothers are educated about the importance of kangaroo care, and the number of neonatal infections and deaths related to premature birth has prominently decreased [10]. In some developing countries of the world with limited technological opportunities, kangaroo care increases the chance of survival of premature infants. However, in developed countries kangaroo care is the best method for holding the infant and for establishing communication and attachment between mothers and infants [10, 12].

Kangaroo care is a safe care model that establishes contact between mother and premature infant as early as possible [2, 13]. With this approach, families can feel secure, and the humanistic care principle can be protected despite high technology [3, 6]. Moreover, infants are not detached from their mothers, and their psychological development is healthier. Initiating a positive mother–infant relationship provides opportunities for infants to establish a basic sense of trust and to develop a healthy personality [3, 5]. Maternal care and mother–infant attachment are necessary for infants’ physical, mental and emotional health [2, 3].

Many scientific studies have proven that kangaroo care is a safe method for premature neonatal infants [2, 3, 5, 11]. Studies have shown that kangaroo care significantly reduces the mortality rate of premature infants [10]. It also increases the breastfeeding rate [14], shortens the pain response time in premature infants born after 32 weeks of pregnancy [15] and speeds up the healing process for physical symptoms [5].

Given these results, kangaroo care has an important place in paediatric nursing, which is based on an atraumatic and family-oriented philosophy of care. Nurses in neonatal intensive care units have important roles such as promoting and maintaining premature infants’ health, and initiating and maintaining positive mother–infant relationships. This is a literature review study that aims to explain the importance and effects of kangaroo care for premature infants.

## **2.Kangaroo Care**

Kangaroo care is a method that establishes interaction between parents and infants. It establishes skin-to-skin contact by putting a naked baby with a diaper on its mother's or father's bare chest in a face-to-face upright position [14]. It is a powerful and easy-to-use way to promote health and to maintain the well-being of infants, whether they are preterm or full-term [16]. An infant that cuddles with its parents relaxes and sinks into a deep and relaxing sleep while hearing their heart sounds. During kangaroo care, parents keep the infant under their clothes to maintain the infant's body temperature. To provide the warmth and comfort of skin-to-skin care, the infants should be naked [2, 16].

### **2.1.The Significance and Effects of Kangaroo Care**

A mother with a premature infant may feel unsuccessful and insecure about failing to give birth to a healthy infant. This can inhibit her desire to communicate with her infant. Reduced self-confidence and failure to meet expectations can cause mothers to have negative perceptions of their infants [3, 17]. Studies have reported that mothers of premature babies touch their babies later than usual, delay seeing their babies and put them on their laps later than usual. They also have difficulty recognizing their babies as their own and perceive their babies more negatively than full-term babies [3, 7]. Moore *et al.* [12] determined that babies who make skin-to-skin contact with their mothers establish more interaction with their mothers, have better thermoregulation and cry less. It has also been determined that mothers tend to breastfeed their babies more and for a longer time, and that babies have an early and positive relationship with their mothers [12]. It is generally frightening for parents to have their premature infants in neonatal intensive care units. Kangaroo care provides an opportunity for mothers and fathers to understand their babies and to take an active role in infant care. It also promotes attachment and maternal recognition of infants [3, 16].

Studies of infants' physiological reactions have determined that kangaroo care stabilises infants' breath and heart rates and maintains body temperature better. It reduces their need for oxygen, periodic respiration and apnea. It also causes infants to gain weight and sleep longer [2, 7, 8]. Other studies have found that kangaroo care shortens the duration of neonatal hospitalisation, makes breastfeeding easier and leads to rapid growth and development [2, 3, 7, 11]. These are other benefits of kangaroo care. Some studies have reported that mothers who provide kangaroo care tend to breastfeed their infants and believe that they can care for their infants. The duration of breastfeeding and the amount of breast milk increases, while mothers' anxiety levels fall [2, 4, 9, 18].

### **2.2.The Application of Kangaroo Care**

Kangaroo care is known to be a safe way to care for stable premature neonatal infants and is used in many hospitals worldwide [13]. Neonatal infants whose gestational age is between 30 and 34 weeks and weigh 1,800 g or more may suffer from some problems due to premature birth. However, most of these babies are stable, and kangaroo care can be initiated for them soon after birth. Most neonatal infants whose gestational ages are between 28 and 32 weeks and weigh 1,200–1,799 g experience respiratory distress syndrome and other complications related to premature birth. At first, they may need some special treatment. It may be necessary to wait a week or more before initiating kangaroo care for these infants [3, 16, 19].

Informing the family and preparing them for treatment are the basic requirements for effective and successful kangaroo care. Before initiating kangaroo care, the family should be informed in detail about the advantages of kangaroo care for infant and for parents, when to begin it, organizing environmental conditions and possible problems. Plans for kangaroo care should be shared with parents, and their informed consent must be obtained [13, 16].

Ideally, parents should stay with their infant day and night. The environment of the neonatal intensive care unit should be appropriate for kangaroo care. The parents' comfort and privacy should be ensured. The environment's physical conditions should allow for comfort and harmony between mother and infant. The duration of mother–infant attachment can be extended by a calm and silent atmosphere, low lighting and mother–infant-oriented care planning [13, 16].

### **2.3.Steps of Kangaroo Care**

- Informing, educating and preparing the family before kangaroo care
- Preparing the environment's physical conditions
- The application of kangaroo care
- Monitoring the infant during kangaroo care [13].

Kangaroo care can be done continuously or a few times a day for a few hours. Kangaroo care should be initiated gradually. Initially, sessions should last less than 60 min. As the sessions continue, their duration can be extended. However, in situations such as lack of incubator, it can be in question that kangaroo care is provided continuously. During kangaroo care, parents keep the infant under their clothes to protect the infant's body temperature [5, 12, 16]. Kangaroo care means the infant, wearing only a diaper and a cap, is laid on its mother or father's bare chest in a prone and upright position. The infant's back can be covered with a blanket. A piece of fabric can be tied in such a way that mother and infant are able to breathe easily. During kangaroo care, the mother should not wear a bra. It is suggested to her to wear a shirt that can be opened in the front or a hospital dress. The ambient temperature should be appropriate and the mother should be seated comfortably. The mother should be alone or, if she is in the hospital, a folding screen should be used to ensure her privacy [12, 17].

### **2.4.Kangaroo Care Nursing Initiatives for Preterm Infants**

These measures are recommended:

- Teaching mothers kangaroo care and enabling them to give it daily
- Giving kangaroo care for 2-3 hour in a day if possible
- Including preterm infants intubated in kangaroo care
- Performing environmental planning which supports the kangaroo care in clinics
- Giving healthcare professional personnel training about the easiness, applicability and safety of kangaroo care and providing them with opportunities to practice it [20].

Infants Who Are Given Kangaroo Care:

- Maintain their body temperature by themselves up to three hours and have higher body temperature than infants provided with normal incubator care
- Weight gain, growth and development are affected positively.
- Behavioural organisation and emotional regulation (sleep-wake cycle, mother-infant attachment) are more developed.
- Breastfeeding is enhanced
- Are more stable clinically [21].

## **3.Results**

It is a current issue that kangaroo care should be considered very important due to its low cost, ease of application and positive effects on premature infants. It is a highly effective method because, while all other developmental support initiatives require additional labour, kangaroo care can be applied in the intensive care unit by a single trained staff member.

Many scientific studies have shown that kangaroo care is a safe method for premature newborns. A Cochrane systematic review conducted by Johnston *et al.* [22] included 22 randomised controlled trials to examine them. This study reported that kangaroo care is a reliable method and kangaroo care given to premature infants during painful invasive procedures had positive effects on their heart rate and duration of crying [22]. A randomised controlled trial conducted by Neu *et al.* [23] showed that the kangaroo care provided for one hour a day decreased significantly the cortisol levels of both preterm infants and mothers, and consequently reduced the stress levels of both [23]. Studies in the literature have reported that the kangaroo care reduced the mortality rate of premature infants, increased the rate of sucking, accelerated recovery from symptoms and shortened the duration of hospital stays. Studies have also emphasised that further studies on the long-term neuro-developmental outcomes of kangaroo care for preterm infants and the costs of care should be conducted [5, 10, 24].

In conclusion, kangaroo care reduces the mortality rate of premature infants and provides advantages in terms of mother–infant attachment and physiological development. Kangaroo care also contributes to the stabilisation of vital signs, nervous system development, early baby feeding, the reduction of medical problems and improved quality of sleep. It also helps the infant to gain weight rapidly, and consequently, reach birth weight in a short time, and sink into a deep and relaxing sleep [2, 3, 10, 11].

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