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Research Article

Effectiveness of the Kangaroo Method for Reduce Pain in Intra-Muscular Injections in Newborn Infants

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Abstract

Aims: Causes of infant mortality from various diseases can be prevented by giving immunizations to infants from birth, but adverse reactions related to immunization are also increasing. Pain caused by injection is an acute pain that is felt by children as an unpleasant sensory and emotional experience as a result of tissue damage. One of the efforts to reduce the pain felt by neonates is to provide midwifery care, namely the kangaroo method. Knowing the effectiveness of the kangaroo method to reduce pain in intramuscular injections in newborns.
Methods: Quasi experimental with Posttest Only Control Group Design. All newborns at PMB Imar khoiriah in August-October 2022 at the time of data collection were 30 people (accidental sampling).
Results: The distribution of pain levels in the intervention group was mostly mild pain of 80%, and in the control group the majority of moderate pain was 73.3%. The average pain in the intervention group was 2.60 and in the control group was 4.93. There is an effectiveness of the kangaroo method to reduce pain on intramuscular injection in newborns (p value 0.000).
Conclusions: There is effectiveness of the kangaroo method for reducing pain in intramuscular injections in newborns. It is hoped that midwives can use the kangaroo method as a reference for non-pharmacological pain management interventions in newborns.

Keywords:
Kangaroo method, Newborn, Pain

INTRODUCTION

According to the World Health Organization (WHO), the infant mortality rate in 2019 is approximately 18 per one thousand live births (1). Afghanistan, according to data from statista.com, will have the highest neonatal mortality rate in the world in 2021. In that country, there are approximately 107 infant deaths per 1,000 births. Somalia ranks second in infant mortality, with 88 fatalities per 1,000 births. The Central African Republic occupies third place with 84 infant fatalities per 1,000 births. The majority of infant deaths occur in impoverished and developing nations, particularly African nations. The leading causes of infant mortality are pneumonia, complications during childbirth, infectious diseases, diarrhea, malaria, measles, and malnutrition. 69% (20,244 fatalities) of the 29,322 under-five deaths reported to the Directorate of Family Health in 2019 occurred during the neonatal period. 80% (16,156 fatalities) of all reported neonatal deaths occurred within the first six days of life. In contrast, 21% (6,151 fatalities) occurred between the ages of 29 days and 11 months, and 10% (2,927 deaths) occurred between 12 and 59 months. Low birth weight (LBW) accounts for as much as 35.3% (7,150) of neonatal deaths. Other causes of death include 27.0% asphyxia (5,464), 12.5% congenital abnormalities

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(2,531), 3.5% sepsis (703), 0.3% neonatal tetanus (56) and 21.4% others (4,340). By immunizing neonates from birth, various causes of infant mortality can be prevented; however, adverse reactions related to immunization have also increased. Adverse events following vaccination are known as adverse events following vaccination (AEFI). AEFIs are medical events suspected to be associated with immunization, such as vaccine reactions or adverse effects, pharmacological effects, injection reactions, or procedural errors (2).

Clinical symptoms that develop as a direct or indirect result of needlestick trauma must be reported as a reaction to post-immunization adverse events (AEFI). Pain, swelling, and redness at the injection site are examples of immediate injection reactions. Indirect consequences are related to the newborn's psychological status, where the baby experiences fear and discomfort, which manifests as crying, movement, hyperventilation, nausea, and even fainting as a form of psychological disturbance as a result of vaccine injection reactions (3) Injection pain is acute pain that children experience as an unpleasant sensory and emotional experience as a result of tissue injury (4). Pain symptoms in newborns (neonates) cannot be stated vocally, but are only suggested by weeping expressions and hand and foot movements. These symptoms are typically understood solely by the mother and those closest to her. Midwifery care, namely the kangaroo method, is one endeavor to alleviate newborn babies' suffering (5,6). The kangaroo method of care is an excellent way to address newborns' most fundamental requirements, which are warmth, breast milk, infection prevention, stimulation, safety, and affection (7). During painful operations, the kangaroo approach has been demonstrated to minimize physiological and behavioral responses in neonates. Kangaroo care (PK), also known as kangaroo method care (KMC), is a newborn care strategy in which babies are kept chest-to-chest and skin-to-skin with their parents (8). When newborns were given vaccines, researchers at PMB Imar Khoiriah observed disturbing behavior such as difficult-to-keep-quiet sobbing, frowning, kicking or pulling their legs jerkily, and not settling down. Meanwhile, newborns given the kangaroo method of vaccination injection displayed grimacing behavior and brief crying intervals. The kangaroo method has never been used as an intervention to reduce discomfort in neonates by intramuscular injection of HB0 vaccine at PMB Imar Khoiriah. The researchers are interested in performing research named "Effectiveness of the kangaroo method to reduce pain in intramuscular injections in newborns at PMB Imar Khoiriah in 2022" based on the description above.

METHODS

Quasi experimental with Posttest Only Control Group Design. All newborns at PMB Imar Khoiriah in August-October 2022 at the time of data collection were 30 people (accidental sampling). The analytical method used is univariate and bivariate analysis with the independent simple test.

RESULTS

Table 1. Pain Frequency Distribution of Intra Muscular Injections in Newborns in the Intervention Group

No	Injection Pain	Frequency	Percentage
1.	No pain	0	0,0
2.	Mild pain	12	80,0
3.	Moderate pain	3	20,0
4.	Severe pain	0	0,0
	Total	**15**	**100,0**

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Based on the table above, it can be seen that of the 15 respondents in the intervention group using the kangaroo method, most of them experienced mild pain as many as 12 respondents (80.0%), and those who experienced moderate pain as many as 3 people (20.0%), while newborns who were given intramuscular injections who did not experience pain and who experienced severe pain were not found.

Table 2. Pain Frequency Distribution of Intra Muscular Injections in Newborns in the Control Group

No	Injection Pain	Frequency	Percentage
1.	No pain	0	0,0
2.	Mild pain	2	13,3
3.	Moderate pain	11	73,3
4.	Severe pain	2	13,3
	Total	**15**	**100,0**

Based on the table above, it can be seen that of the 15 respondents in the control group, most of them experienced moderate pain as many as 11 respondents (73.3%), who experienced severe pain and mild pain the same number, namely 2 people (13.3%) and those who had no pain did not found.

Table 3. Average Intramuscular Injection Pain Levels in Newborns in the Intervention Group and the Control Group

Variable	Group Type	Mean	Std. Deviation	Min – Maks
Intramuscular injection pain	Intervention	2,60	0,986	1 - 4
	Control	4,93	1,280	3 - 7

Based on the table above, it was found that in the intervention group given the kangaroo method, the average pain level for intra-muscular injection in newborns was 2.60 and in the control group, the average pain level for intra-muscular injection in newborns was 4.93. The standard deviation value in the intervention group was 0.986, while in the control group it was 1.280. The minimum-maximum anxiety in the intervention group is 1-4, while in the control group the minimum-maximum value is 3-7.

Table 4. The Effectiveness of the Kangaroo Method for Reducing Pain in Intra Muscular Injections in Newborns

Group Type	Painful		Mean	SD	*P Value*
	Category	F			
Intervention	No pain	0	2,60	0,986	**0,000**
	Mild pain	12			
	Moderate pain	3			
	Severe pain	0			
Control	No pain	0	4,93	1,280	
	Mild pain	2			
	Moderate pain	11			
	Severe pain	2			

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The average intramuscular injection pain in the intervention group was 2.60 with a standard deviation of 0.986%, as shown in the table above. The average perineal tear in the control group was 4.93 and the standard deviation was 1.280. The statistical test yielded a p-value of 0.000 (p 0.05), indicating that there was a statistically significant difference between the average pain of intramuscular injections in the intervention and control groups. On the basis of the above data, it can be concluded that the kangaroo method effectively reduces intramuscular injection pain in neonates, as there is a significant difference between the intervention group and the control group's average value.

DISCUSSION

Pain Levels in the Intervention and Control Groups for Intramuscular Injections in Newborns

According to the study's findings, the average pain level of intramuscular injection in babies in the intervention group using the kangaroo method was 2.60, while in the control group, the average pain level of intramuscular injection in newborns was 4.93. The intervention group's standard deviation was 0.986, whereas the control group's was 1.280. The intervention group has a minimum-maximum anxiety of 1-4, while the control group has a minimum-maximum anxiety of 3-7. Pain is a distressing sensory experience caused by actual tissue injury. Pain perception is highly individual and subjective. As a result, the same stimulus can be perceived differently by two distinct people due to their varied emotions. Pain serves as an alert to recognize tissue damage, therefore the body will respond with a protective strategy, such as moving away from the source of pain to prevent tissue damage from spreading (9). The findings of this study are consistent with the findings of (10), which found that the average pain value for intramuscular injections was 1.67, whereas the average pain in the control group was 4.27. According to the researchers, the average pain in the intervention group was 2.60, which was lower than the average pain in the control group, which was 4.93. This is because the kangaroo method of administering an intramuscular injection to a baby is more comfortable because the baby is in the arms of his parents during the injection.

The Kangaroo Method's Effectiveness in Reducing Pain in Intramuscular Injections in Newborns

According to the study's findings, the average intramuscular injection pain in the intervention group was 2.60 with a standard deviation of 0.986. The average perineal rupture in the control group was 4.93, with a standard deviation of 1.280. The statistical test results yielded a p-value of 0.000 (p 0.05), indicating a significant difference in the average pain of intramuscular injections between the intervention and control groups. Based on the data presented above, it is possible to conclude that the kangaroo approach can successfully reduce intramuscular injection discomfort in neonates, as there is a substantial difference in the average value between the intervention and control groups. Kangaroo method care is an alternative newborn care method. This procedure is one of the most effective and straightforward techniques for treating LBW babies. It is also inexpensive and highly recommended. This strategy not only substitutes the incubator, but it can also deliver extra benefits that incubator administration cannot provide. The kangaroo method is thought to be particularly successful at providing very fundamental baby needs such as warmth, breast milk, infection prevention, stimulation, safety, and affection (11). Pain is a productive mechanism for the body; when there is injured body tissue, the body experiences pain, and this causes someone to react and speak pain; manifestations of pain differ; some cry, scream, and some are silent while biting something (11). The findings of this study are consistent with

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those of (10), which discovered a significant effect of pain reduction between the intervention and control groups, with a p-value (0.000) (0.05) indicating a significant difference between the intervention after the kangaroo method and the control group at the time of newborn intramuscular injection. The kangaroo technique to reducing intramuscular injection discomfort in infants has a substantial impact on getting optimal results.

(6) research also supported the findings of this study, which stated that there was a significant effect of pain reduction between the intervention and control groups, with a p value (0.000) (0.05) indicating that there was a significant difference in the intervention group after the kangaroo method and in the control group at the time of newborn intramuscular injection. According to the researchers' hypotheses, the findings of this study revealed that the kangaroo approach had an effect in reducing intramuscular injection pain in babies. This is because the kangaroo method, when used as a pain reliever during intramuscular injection of newborns, can have physiological effects such as lowering the baby's anxiety and restoring the baby's oxygen saturation and breathing pattern, allowing the baby to feel peaceful in the mother's arms (12). As a result, the kangaroo approach appears to be particularly efficient in minimizing intramurcular pain in babies. Kangaroo care is an excellent method of meeting a baby's most basic requirements, which include warmth, breast milk, infection protection, stimulation, safety, and affection. The kangaroo method has an anesthetic effect because it blocks the transmission of nociceptive stimuli through afferent fibers, thereby inhibiting pain by modulating the endogenous system, changing the baby's blood cortisol levels, and releasing beta-endorphins, which reduces stress and pain via intramuscular injections.

CONCLUSION

The kangaroo method effectively reduced intramuscular injection pain in babies using the intervention group, with an average pain level of 2.60. This is lower than the control group's average pain of 4.93. The kangaroo method provides essential baby needs, such as warmth, breast milk, infection prevention, stimulation, safety, and affection. Its anesthetic effect, blocking nociceptive stimuli, modulating the endogenous system, changing blood cortisol levels, and releasing beta-endorphins, effectively reducing stress and pain through intramuscular injections. Pain levels were largely mild in the intervention group (80%), and mostly moderate in the control group (73.3%). The intervention group's average pain level was 2.60, while the control group's was 4.93. The kangaroo approach is beneficial for minimizing pain during intramuscular injections in neonates (p value 0.000).

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