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The Effect of Swaddling, Stomach Position, Shushing, Swinging, Sucking Methods on Pain Responses of Infants After Basic Immunization in the Dahlia Health Center Area

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Abstract. *Immunization via injection can cause immediate pain in children. Pain that occurs as a result of immunization injections, if not managed properly, can have a negative impact on the child's emotional aspects such as crying and fear. This research uses a quasi-experimental method with a one group pretest-posttest design approach. The sample involved in this research was 64 respondents, selected using Probability Sampling techniques. The research results show that based on the Paired T-Test statistical test, the p-Value value for the influence of the 5S Method (Swaddling, Side-Stomach, Shushing, Swinging, Sucking) is 0.000. Because p < 0.05, the Alternative Hypothesis (Ha) is accepted and the Null Hypothesis (H0) is rejected. Thus, it can be concluded that the 5S Method (Swaddling, Side-Stomach, Shushing, Swinging, Sucking) has a significant influence on the Infant's Pain Response After Basic Immunization at the Dahlia Makassar Community Health Center. The suggestion is that the 5s method be an alternative for treating pain experienced by babies as an effort to minimize pharmacological therapy.*

Keywords: *Basic Immunization, Baby Pain, 5S Method*

1. BACKGROUD

The Indonesian government has taken steps to improve child health services in Indonesia, including through immunization programs (Sari et al., 2020). Some reasons why children do not receive complete or no immunization include fear of post-immunization side effects such as fever, pain, and crying, family non-permission, long distance to immunization sites, parents' busy schedules, frequent illnesses, economic reasons, and lack of knowledge about immunization service locations. (Sari et al., 2020).

One of the consequences of immunization is the sensation of pain caused by needle injections. (Putri et al., 2022). To reduce pain, pain management is needed. Nurses, as service providers, have an important role in managing pain in infants during the immunization process. Effective pain management can reduce tension in infants during the immunization procedure and has the potential to increase satisfaction with the immunization experience, especially from the infant's perspective, as well as getting positive responses from parents. (Sagita Dewi et al., n.d).

Pain management can be done using pharmacological and non-pharmacological methods. Pharmacologically, pain can be managed using opioids (narcotics), non-opioids/NSAIDs, and coanalgesics. Meanwhile, non-pharmacological management includes environmental interventions, the use of non-nutritive and nutritional suction

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techniques, sweet solutions, skin-to-skin care (Kangaroo care), music, and giving. Pain management involves the use of several senses such as sight, hearing, touch, taste, and touch carried out by the baby's mother herself, more effective in reducing the pain response during immunization and minimizing the use of drugs that can have a negative impact on the baby's health.

2. THEORETICAL STUDY

Immunization is an action to actively stimulate or increase a person's immunity against certain diseases. The goal is that if one day exposed to the disease, the individual will not experience a serious illness or only experience mild symptoms. Some infectious diseases included in the immunization program in Indonesia (PD3I) include Hepatitis B, TB (Tuberculosis), diphtheria, pertussis (whooping cough), tetanus, polio, measles, rubella, meningitis, and pneumonia. (Ministry of Health of the Republic of Indonesia, 2022)

Pain in infants is a response to a stimulus or stimulation characterized by crying and body movements, indicating discomfort (Apriani et al., 2022). Pain in infants involves a complex interaction between the nervous system that sends impulse signals due to tissue damage and unpleasant sensory and emotional experiences (Wahyuni & Suryani, 2020). According to Dewi et al. (2020), pain in infants is an unpleasant sensory and emotional experience due to actual or potential tissue damage. According to Maradona (2023), the pharmacological approach to pain management involves the use of pain relievers. One common pharmacological intervention is Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), which have analgesic (pain reliever), anti-inflammatory, and antipyretic effects. NSAIDs are used to reduce inflammation, pain, and reduce fever in patients.

On the other hand, non-pharmacological methods, as recommended by the Association of Pediatric Anesthesia (APA) in 2012, are a very effective approach to reducing procedural pain in children. This method is not only easy to use but also cost and time efficient, and has a lower risk of side effects compared to pharmacological approaches (Maradona, 2023).

One of the non-pharmacological methods that can be used is the 5S Method (Swaddling, Stomach Position, Shushing, Swinging, Sucking) introduced by Harvey Karp involving Swaddling, Stomach Position, Shushing, Swinging, Sucking. This method aims to create an atmosphere that resembles the environment in the womb, which is known to provide comfort and reduce stress in babies (Maradona, 2023). Swaddling is a technique

of wrapping a baby in soft cotton cloth to provide warmth and comfort similar to the conditions in the womb. This helps focus the baby's attention, reduces reflex movements such as hitting, and avoids restlessness (Mamentu & Apriliawati, 2020). The 5S Swaddling method is an effective way to regulate a baby's body temperature and create a sense of security during wrapping (Susanti et al., 2020).

Side (Laying the Baby in a Side Position) Laying the baby in a side or stomach position helps calm the baby by reducing the startle Moro reflex when the baby is in a supine position. This position provides comfort similar to the atmosphere in the womb, either tilted to the left or right (Mamentu & Apriliawati, 2020). During the immunization process, positioning the baby on his side can reduce the stress felt (Sari et al., 2020a). Shushing (Soothing Sighs) is a technique of making a "ssssshhhhhhh" sound near the baby's ear, imitating the sound of blood flow in the womb which can calm the baby (Mamentu & Apriliawati, 2020). This sound helps reduce tension and anxiety in babies during immunization (Sari et al., 2020). Swinging involves gently rocking the baby, similar to the movements in the womb when the mother moves. These small movements help calm the baby by keeping the baby's head aligned with his body (Sari et al., 2020). This can reduce the baby's anxiety and speed up the calming process (Mamentu & Apriliawati, 2020). Sucking, such as breastfeeding, helps reduce the baby's pain response by stimulating the release of endogenous opioids in the baby's brain. Skin contact and the warm feeling from the mother while breastfeeding are also effective distractions to reduce pain and discomfort during immunization (Sari et al., 2020).

Pathophysiology of the 5S Method (Swaddling, Side/Stomach Position, Sushing, Swinging, Sucking) in Pain Management The Harvey method, including swaddling, side (tilted position), shushing (whispering the sound "ssssshhhhhhh" into the baby's ear), swinging (short swinging movements), and sucking, is a non-pharmacological pain management strategy that aims to increase the baby's comfort by stimulating them as in the womb (Sari et al., 2020).

Emotional and mental well-being significantly affects physical conditions and the release of chemicals and endorphin hormones that contribute to feelings of happiness, calm, and well-being (Falisha Achyar, 2023). Endorphins are compounds that function as inhibitors of the transmission of pain signals to the brain, blocking the release of substance P from sensory neurons when peripheral neurons send pain signals to the brain (Saputra et al., 2021). Distraction by breastfeeding or giving a pacifier can be effective in reducing pain responses because breast milk not only strengthens the psychological bond between

mother and baby but also has an analgesic effect due to its sweet taste. Lactose in breast milk stimulates the release of endogenous opioids that reduce the perception of pain without transmitting pain signals to the brain, so that the baby does not feel pain during the injection process (Dewi et al., 2020).

3. RESEARCH METHODS

This study uses a quasi-experimental method with a one group pretest-post test design. The sampling method used is probability sampling, where each individual in the population has an equal opportunity to be selected as a research sample. The sample in this study were babies who came to do DPT immunization in the Dahlia Makassar Health Center area, which were selected based on certain criteria set at 64 babies.

This study will begin by conducting a pre-test before giving treatment. After that, the treatment given is the 5S method (swaddling, side/stomach position, sushing, swinging, sucking) to babies after basic immunization. Finally, a post-test is conducted to evaluate the results after the treatment is given.

In this study, a paired comparative test was used to compare significant changes in babies before and after the application of the 5S method. The statistical method used is the Paired T Test, which was chosen because the observed variables have more than two categories and the data obtained from the data normality test are normally distributed.

4. RESULTS AND DISCUSSION

Result

From the results of data processing with a sample of 64 babies at the Dahlia Health Center which was carried out from March to July 2024. The following normality test results were obtained:

Table 1 . Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Result	.290	128	.000	.769	128	.000

a. Lilliefors Significance Correction

Table 2 . The Effect of the 5S Method (Swaddling, Side-Stomach, Shushing, Swinging, Sucking) on the Pain Scale in Infants After Immunization Procedures

	Mean	N	Std. Deviation	Sig.
Pre Test	6.8594	64	1.54167	0.000
Post Test	2.5469	64	1.50058	

Source: Primary Data, 2024

Based on the results of the study using statistical analysis of the Paired T-Test, there was a significant difference between the conditions before and after the intervention. Before the intervention, the mean pain scale was 6.8594 with a standard deviation of 1.54167. After the implementation of the 5S Method (Swaddling, Side-Stomach, Shushing, Swinging, Sucking), the mean pain scale decreased to 2.5469, with a standard deviation of 1.50058, indicating a lower pain scale in the mild category. The results of the Paired T-Test statistical test showed a p-Value of 0.000. Because the p value <0.05, the alternative hypothesis (Ha) is accepted and the null hypothesis (H0) is rejected. Thus, it can be concluded that the 5S Method (Swaddling, Side-Stomach, Shushing, Swinging, Sucking) has a significant effect on the pain response of infants after basic immunization at the Dahlia Makassar Health Center.

Discussion

The 5S intervention is one of the non-pharmacological therapeutic approaches that is effective in increasing infant comfort and significantly reducing pain. This action includes several steps such as wrapping the baby with a soft cotton cloth (Swaddling), placing the baby in a tilted position to the mother's stomach (Side/Stomach Position), providing a swinging motion (Swinging), producing a "sssshhhhh" sound (Shushing) near the baby's ear, and providing an opportunity for non-nutritive sucking (Sucking). The combination of these actions is designed to relieve stress and increase the baby's comfort by mimicking the conditions they are familiar with in the womb.

Swaddling is a technique of wrapping a baby in a soft cotton cloth to provide warmth and comfort similar to the conditions in the womb. This helps focus the baby's attention, reduces reflex movements such as hitting, and avoids restlessness (Mamentu & Apriliawati, 2020). The 5S Swaddling method is an effective way to regulate the baby's body temperature and create a sense of security during wrapping (Susanti et al., 2020).

Laying the baby on the side or mother's stomach helps calm the baby by reducing the startle Moro reflex when the baby is in a supine position. This position provides comfort similar to the atmosphere in the womb, either tilted to the left or right (Mamentu

& Apriliawati, 2020). During the immunization process, positioning the baby on his side can reduce the stress felt.

Shushing is a technique of making a "ssssshhhhhhh" sound near the baby's ear, imitating the sound of blood flow in the womb which can calm the baby (Mamentu & Apriliawati, 2020). This sound helps reduce tension and anxiety in babies during immunization.

Swinging involves gently rocking the baby, similar to the movement in the womb when the mother moves. This small movement helps calm the baby by keeping the baby's head aligned with his body (Sari et al., 2020). This can reduce the baby's anxiety and speed up the calming process (Mamentu & Apriliawati, 2020). Sucking, such as breastfeeding, helps reduce the baby's pain response by stimulating the release of endogenous opioids in the baby's brain. Skin contact and the warm feeling from the mother while breastfeeding are also effective distractions to reduce pain and discomfort during immunization (Sari et al., 2020). Lactose in breast milk stimulates the release of endogenous opioids that reduce pain perception without transmitting pain signals to the brain, so that the baby does not feel pain during the injection process (Dewi et al., 2020). This non-pharmacological intervention has been shown to be effective in managing mild to moderate pain in newborns (Hidayah et al., 2023).

In line with research conducted by Pasaribu and Septiang (2021) which showed that the 5S Method (Swaddling, Side/Stomach Position, Shushing, Swinging, Sucking) can significantly reduce pain responses in infants. Another study by Silvia et al. (2020) also indicated that the 5S Method developed by Harvey had a significant effect on pain responses in infants during immunization, with a very low p-value ($p \leq 0.005$). In addition, research by Harahap (2021) also found that the 5S Method significantly reduced pain in infants after receiving basic immunization injections, with a p-value of 0.000 ($p < 0.05$).

5. CONCLUSIONS AND SUGGESTIONS

Based on the results of statistical tests using the Paired T-Test, it was found that the p value (0.000) was smaller than α (0.05), which means that H0 is rejected. This indicates the influence of the Swaddling, Stomach Position, Shushing, Swinging, Sucking Methods on Infant Pain Responses After Basic Immunization in the Dahlia Health Center Area. Suggestions for health workers and the public in general so that this method becomes an alternative for handling pain experienced by infants as an effort to minimize pharmacological therapy that can cause side effects.

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