



Effect of Murottal Al-Quran Therapy on Neuromuscular Maturity of Premature Babies

Dyah Maria Ulfah^{1*}, Hani Fauziah¹, Agustin Topan Sari²

¹STIKES Bani Saleh, Indonesia

²RSUD dr Chasbullah Abdul Madjid Kota Bekasi, Indonesia

Abstract

Premature babies are at risk of dying 70 times higher than normal birth babies because their organ systems are not fully mature. Murottal Al Quran is a form of non-medical therapy that uses sensory stimuli. The purpose of this study was to determine the effect of murottal Al-Qur'an therapy on neuromuscular maturity of preterm infants. The research design used a quasi-experimental study with 20 babies in the intervention group and 20 babies in the control group as respondents. The method of collecting data is by listening to the murottal Al Quran for 30 minutes in 21 days. The results of the analysis state that there is an effect of giving Murottal Al-Quran therapy on Neuromuscular Maturity of Premature Babies.

Keywords

premature, neuromuscular maturity, new ballard score

*Corresponding Author: Dyah Maria Ulfah (E-mail: nonae2511@yahoo.com)

Introduction

Premature babies are babies born in the gestational age range of 28 - 37 weeks or babies born not yet full term. They are at risk of dying 70 times higher than normal born babies. Every year, an estimated 15 million babies are born prematurely (before 37 full weeks of pregnancy), and this number continue to increase (Crump et al., 2013).

Complications of preterm birth are the leading cause of death in children under 5 years of age, causing approximately 1 million deaths in 2015. Three-quarters of these deaths could be prevented with current, cost-effective interventions. In 184 countries, preterm birth rates range from 5% to 18% of babies born. (WHO, 2018)

The high morbidity and mortality in premature babies is caused by difficulties in adapting to life outside the womb because their organ systems are not fully mature. (Aita et al., 2017) For example, the lungs in the respiratory system, the heart in the circulatory system (heart), the intestines in the digestive and absorption system, and the brain in the central nervous system. Care for premature babies is to help them adapt to life outside the womb. (Myrhaug et al., 2020) More than three-quarters of premature babies can be saved with appropriate and cost-effective care, such as essential care during labor and in the postnatal period for each mother and baby, administration of antenatal steroid injections (given to pregnant women who risk of experiencing prematurity (WHO, 2018)

Murottal Al Quran Therapy is a form of complementary therapy using sensory stimulation by chanting or listening to the Holy Qur'an (Salsabila & Yanti, 2022). This therapy is included in music therapy which has been carried out by several researchers and is able to have the effect of reducing pain and stress, helping sleep quality more effectively and increasing the release of endorphins which make you feel calm and comfortable. (Rilla et al., 2014)

Apart from that, parents can easily do Al-Quran murottal therapy to help improve the growth and development process of babies and toddlers. The proportion of neonatal deaths due to prematurity according to WHO was 14 percent in 2000, increasing to 15 percent in 2001-2005 and 16 percent in 2006-2008, and continued to increase to 17 percent in 2009-2011 (Brady E. Hamilton et al., 2013). Meanwhile, in 2010 the number of neonatal deaths due to prematurity was 32,342 out of 73,404 neonatal deaths.

The Neonatal Mortality Rate (AKN) in the Southeast Asia region in 2017 was 21.3 per 1000 live births (KH). Data obtained from the results of the 2017 Indonesian Demographic and Health Survey (SDKI) shows that AKN is 15 per 1000 live births (Rostina et al., 2022). Meanwhile, perinatal mortality itself is a measure of a country's ability to provide quality and comprehensive health services. Indonesia has an incidence rate. (WHO, 2018) One of the causes of high perinatal deaths is caused by premature birth. Premature birth is an important problem of AKN. The premature birth rate in Bekasi City is 30.3% and 70% of the high number of perinatal deaths is caused by premature birth. Premature babies have a 9.31 percent greater risk of dying compared to those born at term. (Rahayu, n.d.) Non-pharmacological therapy along with pharmacological therapy has now also been widely studied. One of the non-pharmacological therapies is listening to murottal Al-Quran or classical music (Permana et al., 2021). Several studies show that murottal therapy can reduce pain, reduce nervous tension, activate natural endorphins, increase feelings of calm and divert attention from fear, anxiety and tension. (Labor et al., n.d.)

Various stimulation done for increasing neuromuscular maturity in premature babies to reduce the risk of morbidity and death (Majella Livingston & Hm, 2018). One non-pharmacological therapy that can be used is murottal therapy. Murottal therapy is part of music therapy which can improve neuromuscular maturity in

premature babies (Ningsih & Rofiatun Rosida, 2023). Previous research results show that murotal therapy can reduce pain, reduce nervous tension, activate natural endorphins, increase feelings of calm and divert attention from fear, anxiety and tension. Other research also shows that murotal therapy can have the same tone as brain vibrations, thereby stimulating the brain to work more optimally. There is also a significant reduction in pulse rate with Al-Quran murotal therapy in LBW babies. Stimulation using the Ballard method in newborns can actually help neuromuscular maturity. The level of maturity of the function of the neonate's organ systems is a requirement for adapting to life outside the womb. The Ballard Score is a set of procedures developed by Dr. Jeanne L Ballard to determine gestational age through neuromuscular and physical assessment of the newborn. (Lordier et al., 2019)

This study aims to assess the effectiveness of applying murotal therapy to increase the physical maturity of premature babies as assessed by the Ballard score so that it is hoped that the risk of morbidity and death in premature babies can be reduced. The specific aim of the success of this research is to determine the effect of Al-Quran murottal therapy on the physical maturity of premature babies.

Method

This research uses a quasi-experimental design approach non-randomized control group pretest-posttest design. Sampling using techniques purposive sampling. The number of samples in this study was 40 premature babies consisting of 20 experimental group babies and 20 control group babies. The inclusion criteria for this study were premature babies with good hearing function with a gestational age of 28-36 weeks from Muslim families and the family was willing to participate in this research by signing a letter of informed consent.

The data collection technique begins

with identifying and screening each potential respondent who has the potential to become a sample. If the respondent meets the inclusion criteria, then the research team offered people's willingness respondent's age. Then the parents of respondents who were willing and agreed to participate in the research were given an informed consent sheet to read, understand and sign. Determining the respondent group (intervention or control) by drawing lots simple. The intervention group was given standard care and Murottal Al Quran while the control group received standard hospital care without murottal Al Quran.

Carry out baseline measurements (T0) for the intervention and control groups. Respondents underwent a hearing examination by providing sound stimulation and seeing the baby's response to the sound. The Murottal Al-Quran intervention was given according to the protocol that had been created for the intervention group. Listening to Al Quran murottals at 09.00-12.00 WIB in the Perinatology room. Each baby is listened to the murottal of Al-Quran Surah Al Fatihah 7x and Morning Dhikr in total duration is 30 minutes. The loudspeakers are inserted into each incubator and not through a mass sound source. Then the measurement of neuromuscular maturity with the New Ballard Score in the intervention group was carried out every 5 days after the intervention was given.

Result and Discussion

The research results can be described in the following table 1.

The results of bivariate analysis using the T-Independent Test stated that there was a significant difference between the Ballard score between the intervention group and the control group with a p value (0.000) < α (0.05). Based on these results, H_0 is rejected, which means that there is an influence of providing Al-Quran murottal therapy on the neuromuscular maturity of prematu-

Table 1. Responden Demographic Data

Category	Research Experiment	Group Control
Gender		
a. Man	9 (45%)	16 (80%)
b. Woman	11 (55%)	4 (20%)
Gestation period		
a. 28 – 32 weeks	7 (35%)	10 (50%)
b. 33 – 37 weeks	13 (65%)	10 (50%)
Mother's Age		
a. < 20 years	1 (5%)	0 (0%)
b. 20 – 35 years	19 (95%)	12 (60%)
c. > 35 years	0 (0%)	8 (40%)
Parity		
a. Primipara	6 (30%)	4 (20%)
b. Multiparous	11 (55%)	15 (75%)
c. Grande multiparous	3 (15%)	1 (5%)
Types of Childbirth		
a. Vaginal	16 (80%)	12 (60%)
b. Abdominal	4 (20%)	8 (40%)

Table 2. Bivariate Analysis Result

Group	Time	Mean	Std. Deviation	Std. Error Mean	Correlation	P Value
Experiment	Before	18,65	2,996	0,670	0,847	0,000
	After	22,25	2,359	0,528		
Control	Before	16,95	2,350	0,526	0,932	0,000
	After	19,95	2,762	0,618		

re babies in Bekasi City.

Music has a rhythm that can influence the rhythm of human heart rate and respiratory movements. If the musical sound received is a calming and regular sound repeatedly, the music will provide impulses to the hypothalamus to respond to the adrenal medulla gland to suppress the release of the hormones epinephrine and norepinephrine or the release of catecholamines into the blood vessels to be reduced. As a result, the concentration of catecholamines in plasma becomes low, so the heart rate decreases. (Ina, 2019)

Alternative and complementary therapy is a form of therapy that is not standard in a patient's treatment plan. However, this

therapy is often chosen by many people as a complement to the pharmacological therapy they have received. Therapy Non-pharmacological therapy that has been widely used is heat therapy, massage, music and touch. The center for complementary therapies has listed 10 commonly used therapies such as diet, deep breathing techniques, yoga and other exercises, chiropractic, meditation, special diets, relaxation and integrated imagery. (Sari, 2013)

Meanwhile, music therapy is included in sensory therapy which has a calming effect on tension and distracts attention so as not to feel pain. Some conditions that allow for music therapy are medical healing, pain due to procedural processes, after surgery,

wound debridement, labor pain, cancer patients, palliative care and neuropathic pain. Music therapy is a sensory therapy that has been practiced by many cultures for thousands of years.

Music therapy can include listening to music, writing music lyrics or singing. But what is most often done is listening to music therapy via headphones or loudspeakers. Music therapy is sound stimulation consisting of melody, rhythm, harmony, form and style which is organized in such a way as to create music that is beneficial for physical and mental health. (Persalinan et al., n.d.)

The Koran is the revelation of Allah Subhanahu wata'ala which was revealed to humans through the Prophet Muhammad sallallaahu 'alaihi wasallam as a guide to human life. The Koran is the holy book of Muslims which is believed to be true and when read and practiced, you will get rewards in return. The Koran is also referred to as Ash Syifa, which means a healer for physical and psychological illnesses. The art of reading the Koran using correct recitation and a special rhythm is also called Tilawatil Koran. Meanwhile, the person who reads it is also called Qori' or Qori'ah. Murottal means in Rathu As-Syaghiri's language, namely a good plant, ripe and blooming. Meanwhile, according to the term, it is a calm reading, the letters are written correctly or according to the meaning and every meaning is absorbed. (Putriana & Aliyanto, 2018) According to Anwar (2008) Murottal is a way to preserve the Al Quran by recording it while still paying attention to the laws of reading, the makhroj of letters and paying attention to the correct stop signs.

Murottal is a collection of readings of Al-Quran verses which aims to preserve them by recording the readings.

(Meyrani & Hartati, 2013), mention that therapy with reading the Koran is a stimulant Al-Qur'an murottal can be used as a new alternative therapy as a relaxation therapy, even better than other audio therapies because the Al-Qur'an stimulant can produce delta waves. Delta waves are waves that

have a large amplitude and a low frequency below 4 Hz, produced by the brain when people are asleep or in the resting phase for the body and mind (Prasekolah et al., 2009). The results of research conducted by (Qadiy, 1984) regarding the influence of the Al-Qur'an on the body's organs, succeeded in proving that just by listening to the reading of the verses of the Al-Qur'an, a Muslim, for those who understand Arabic or not, can feel physiological changes. Very large.

One of the benefits of Al-Quran reading therapy is that it can soothe the soul (QS Al A'raf: 203-204) and be a cure for pain because it can reduce stress hormones, activate natural endorphin hormones, increase feelings of relaxation and divert attention from fear, anxiety and tension. . Improves the body's chemical system thereby lowering blood pressure, slowing breathing, heart rate, pulse and brain wave activity. (Annisa, 2017)

Conclusion

The results of the study stated that there was a significant difference between the Ballard score between the intervention group and the control group with a p value $(0.000) < \alpha (0.05)$ means that there is an influence of providing Al-Quran murottal therapy on Muslim babies who are hospitalized with emergency conditions.

References

- Aita, M., Stremmler, R., Feeley, N., Lavallée, A., & Clifford-faugère, G. De. (2017). *Effectiveness of interventions during NICU hospitalization on the neurodevelopment of preterm infants: a systematic review protocol*. . 1–5.
- Annisa, T. (2017). Pengaruh mendengarkan dan membaca al quran terhadap penurunan tekanan darah pada lansia hipertensi di panti sosial tresna werdha mabaji gowa. . *Skripsi*, 81–82.
- Brady E. Hamilton, Donna L. Hoyert, P., &

- Sudirman A. Martin, M. (2013). Ringkasan Tahunan Statistik Vital: 2010–2011. *Pediatrics*, 131(3), 548–558.
- Crump, C., Sundquist, K., Winkleby, M. A., & Sundquist, J. (2013). Early-term Birth (37–38 Weeks) and mortality in young adulthood. *Epidemiology*, 24(2), 270–276. <https://doi.org/10.1097/EDE.0b013e318280da0f>
- Ina, A. A. (2019). Pengaruh Pemberian Terapi Musik Lullaby Terhadap Vital Signs pada Bayi Prematur. *Jurnal Kesehatan*.
- Lordier, L., Meskaldji, D., Grouiller, F., Pittet, M. P., Vollenweider, A., & Vasung, L. (2019). Music in premature infants enhances high-level cognitive brain networks. 116(24), 12103–12108.
- Majella Livingston, L. M., & Hm, M. B. A. (. (2018). *Effectiveness Of Tactile And Auditory Stimulation On Physiological Parameters Among Preterm Neonates Doctor Of Philosophy In Nursing*.
- Myrhaug, H. T., Brurberg, G., Hov, L. , & Markestad, T. (2020). *Survival and Impairment of Extremely Premature Infants : A Meta-analysis*. 143(2).
- Ningsih, W., & Rofiatun Rosida, S. (2023). *Sound Of Al-Quran Therapy (Saqty) On The Physiological Function Of Premature Infants In The Nicu*. 21(1). <https://journal.aiska-university.ac.id/index.php/gaster>
- Meyrani, & Hartati. (2013). *Structure Of Editorial Board Prosiding International Seminar Univercity Of Muhammadiyah BENGKULU*. www.umb.ac.id
- Permana, B., Nurhayati, N., Amelia, N. C., & Lindayani, L. (2021). *THE Effectiveness Of Al-Qur'an Murrotal Therapyon Reducing Pain Among Postoperative Patients: A Systematic Review*.
- Persalinan, N., Kecemasan, D. A. N., & Ibu, P. (n. d.). (n.d.). *Nyeri persalinan dapat menimbulkan stress yang menyebabkan pelepasan hormon yang berlebihan seperti katekolamin dan steroid . Hormon ini dapat menyebabkan terjadinya ketegangan otot polos dan vasokonstriksi pembuluh darah*. 1–15.
- Prasekolah, A., Tk, D. I., & Purwokerto, P. (2009). *Jurnal Keperawatan Soedirman (The Soedirman Journal of Nursing)*. 4(3), 112–118.
- Putriana, Y., & Aliyanto, W. (2018). *Efektivitas Perawatan Metode Kangguru (PMK) dan Terapi Murottal terhadap Peningkatan Berat Badan dan Suhu pada Bayi BBLR*.
- Rahayu, R. S. (n. d.). (n.d.). *BBLR seringkali mengalami kesulitan pada masa transisi dari intra uterin ke ekstra uterin karena imaturitas organ . Masa perawatan yang lama , suasana ruang intensif dan tindakan medis yang dialami BBLR menyebabkan stres fisiologis yang akan mempengaruhi*. 1–8.
- Rilla, E. V., Ropii, H., & Sriati, A. (2014). Terapi Murottal Efektif Menurunkan Tingkat Nyeri Dibanding Terapi Musik pada Pasien Pascabedah. *Jurnal Keperawatan Indonesia*, 17(2), 74–80.
- Rostina, R., Arlianti, N., & Abdullah, A. (2022). The Relationship Of Low Birth Weight (Lbw) With Death Neonatal In Indonesia (2017 Idhs Data Analysis). *Jurnal Kesehatan Masyarakat Aceh*, 8(1), 41–47.
- Salsabila, F., & Yanti, Y. (2022). *THE Effect Of Murottal Qur'an Therapy Towards Reducing Pain In Labor Active Phase*. 16–17. <https://doi.org/10.34011/ici-hcce.v4i1.201>
- Sari, Y. (2013). *Efektivitas Terapi Musik Klasik Mozart Terhadap Suhu Tubuh Bayi Prematur di Ruang Perinatologi Di RSUD Banyumas*.
- WHO. (2018). *Preterm Birth*.