

THE EFFECTIVENESS OF MOZART CLASSICAL MUSIC THERAPY AGAINST PREMATURE INFANT'S BODY TEMPERATURE IN PERINATOLOGY WARD, TELUK KUANTAN GENERAL HOSPITAL

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Abstract

Premature infants have immature body functions. One of the body functions is temperature regulation. Commonly premature infants get hypothermia. Mozart classical music therapy is a kind of therapeutic music which can help healing process in premature infants. This study aimed to determine the effectiveness of Mozart Classical Music Therapy for premature infants's body temperature in Perinatology Ward Teluk Kuantan General Hospital. The design of this study was quasy experiment. The number of samples in this study were 30 premature infants which had selected through purposive sampling method and met inclusion criterias. Then the samples were grouped into intervention and control group which each group consist of 15 infants. Intervention group was given Mozart Classical Music therapy during 15 minutes each day for 7 days. This study was analysed with t-test. The result of study showed that infant's body temperature in intervention group before getting intervention ($36,46 \pm 0,192$) and after ($36,88 \pm 0,237$) with p value $0,000 < 0,05$. It means there was difference body temperature before and after getting intervention. Control group who didn't get intervention had the result before ($36,593 \pm 0,26$) and after ($36,40 \pm 0,12$) with p value $0,119 > 0,05$. It means that there was no difference body temperature in control group. Unpaired t test was used to know the difference of premature infant's body temperature beetwen intervention and control group. This test showed that in intervention group ($36,88 \pm 0,237$) and control group ($36,40 \pm 0,12$) with p value $0,000 < 0,05$. It means there was difference premature infant's body temperature in intervention and control group. The conclusion of this study was Mozart Classical Music Therapy was more effective to stabilize premature infant's body temperature so that can be suggested to perinatology nurse and parents giving Mozart Classical Music as a therapy for caring premature infant's body temperature.

Keywords: body temperature, mozart classical music therapy, premature infants.

BACKGROUND

Premature infants are infants who born with gestation age less than 37 weeks and weight less than 2500 gram (Low Birth Weight). Most of their organs functions is not properly.

Nowdays, the number of premature birth is increasing all of the world. Every years 15 millions premature infants are born. It means more than one premature birth amongst ten births normally.

All of the premature infants are susceptible having disorder, particularly

premature infants. Most of them need special treatments in order to stay alive. Prematurity is the biggest causes of neonatal death. Besides that, it is also the second biggest causes of death in children under 5 years old after pneumonia (WHO, 2012).

Indonesia is one of 11 countries which have premature birthrate $> 15\%$ (Republic Indonesia Health Department, 2013). Based on Indonesia Health and Demography Survey, infant death rate in Riau Province about 19,65/1000 live birth. In Riau Province infant death rate because premature found 2,66 % (Riau Health Department, 2012).

Based on pilot study in Perinatology Ward Teluk Kuantan General Hospital, found that 154 infants who low birth weight in 2013, while in January – March 2014 found 77 premature infants and 20 infants of them got hypothermia (Perinatology Ward Registration Book, 2014).

The problem that often occur in premature infants is hypothermia, unstable of weight, aspiration syndrome, hypoglicemia, hyperbillirubin, etc (Bobak et al, 2005). Therefore, need special treatment to help them in stimulating physiology maturation for example nursing therapy. Nowadays, so many nursing

therapies to help patient recovery, such as music therapy.

Many studies revealed that giving particular classical music therapy can reduce length of stay and hospital cost. Music therapy in premature infants have been applied in many countries, but in Indonesia it is applied rarely (Sudarwanto, 2009).

Based on the backgrounds, the purpose of this study is to know efectiveness Mozart Classical Music Therapy againts premature infant's body temperature in Perinatology Ward Teluk Kuantan General Hospital.

METHODS

Data collection was conducted since Agust through September 2014 in Perinatology Ward, Teluk Kuantan General Hospital. The design of this study was quasy expriment (non randomized control trial group pretest-posttest design) (Ary, et al, 2010).

The number of samples in this study were 30 premature infants who had selected through purposive sampling technique and met the inclusion criterias. The inclusion criterias were infants had gestation period beetwen 31-36 weeks, 1500-2500 gram, infant's age minimal 3 days postpartum, infant's body premature about 36,3 to 36,9 °C. Meanwhile, the exclusion criterias were

infants with respiratory distress, congenital abnormalities, neonatal seizure, hearing loss, and sepsis.

The samples had met inclusion criterias were grouped into control group (Group A) and intervention group (Group B), which each group consist of 15 infants. Intervention group was given Mozart Classical Music Therapy for 7 days.

The procedures in this study were before getting intervention, premature infant's body temperature (Group A and B) were examined through axilla measurement which using digital thermometer. Then, the music was listened to infants by distances 30 cm of infant's ear. It was played with frequency 65 dB during 15 minutes each day.

The data were analysed in univariate and bivariate test by using SPSS 16.0 for Windows programme application. Univariate analysis or descriptive statistics such as mean value and standard deviation

were used to describe characteristics of the sample. Meanwhile, bivariate analysis such as t-test was used to determine how the effect music therapy as independent variable against body temperature as dependent variable. The level of significance for this study was set at 0,05.

RESULTS

1. Demographic Data

Demographic data were characteristic of the sample based on gender, infant's age, gestation periode, and body weight. Demographic data for the 30 premature infants in this study are shown in Table 1. The majority gender of the sample were 16 baby girls (53,3%) and 14 baby boys (46,7%). All gestation periode was 31-35 weeks (100%). The mean age of the control group was 12 days and

Table 1.
Demographic Data (N=30)

Variable	Control Group (A)		Intervention Group (B)	
	N	%	N	%
Gender				
Boy	7	46,7	7	46,7
Girl	8	53,3	8	53,3
Gestation Periode				
31-35 weeks	15	100	15	100
Variable	Mean	SD	Range (Min-Max)	
Age				
Control group (A)	12,13	4,068	6-18	
Intervention group (B)	9,40	4,53	5-20	

Body Weight			
Control Group (A)	1921,87	274,36	1550-2480
Intervention Group (B)	2080,33	319,3	1525-2500

the mean age of intervention group was 9 days. It means mean age of control group lower than intervention group. While the mean weight body of control group was higher than intervention group.

2. Premature Infant's Body Temperature Before Getting Music Therapy

The statistic descriptive result of infant's body temperature before getting music therapy showed that both of the groups have the mean were almost same . For detail on table 2.

Based on unpaired t-test (independent t-test) showed that p value $0,119 > 0,05$. It could be concluded that there was no difference body temperature before getting music therapy in control and intervention group.

Table 2
The Difference of Premature Infant's Body Temperature Before Getting Music Therapy in Control and Intervention Group

Group	Mean \pm SD	t	Sig
Control (A)	36,5 \pm 0,2576	1.607	0,119
Intervention (B)	36,4 \pm 0,1920		

3. Premature Infants's Body Temperature Before and After in Intervention Group

The result of paired t-test before and after getting music therapy showed p value 0,000. It means p value $0,000 < 0,05$. It could be concluded that there were difference of body temperature before and after getting music therapy significantly. It is shown on table 3.

Table 3
The Difference of Body Temperature Before and After in Control Group

Control Group (A)	Mean \pm SD	t	Sig
Before	36,593 \pm 0,26	1.607	0.119
After	36,40 \pm 0,12		

4. Premature Infant's Body Temperature Before and After in Intervention Group

The result of paired t-test (dependent t-test) showed that the mean of body temperature in intervention group (Group B) before getting therapy was $36,460 \pm 0,192$, while after getting therapy body temperature was $36,880 \pm 0,237$. It showed that premature infant's body temperature increased about $0,42^{\circ}\text{C}$.

Based on paired t-test showed that p-value $0,000 < 0,05$. It means there was difference significantly premature infant's body temperature before and after getting Mozart Classical Music Therapy. For detail in Table 4.

Table 4
The Difference of Body Temperature Before and After in Intervention Group

Intervention Group	Mean ± SD	t	Sig
Before	36,460 ± 0,192	-12.296	0,000
After	36,880 ± 0,237		

5. Premature Infant’s Body Temperature After Getting Music Therapy in Intervention Group and Without Getting Therapy in Control Group

The result of unpaired t-test (independent t-test) after getting music therapy in intervention group found that the mean of premature infant’s body temperature was 36,8 ± 0,237. Meanwhile, in control group found that body temperature was 36,4 ± 0,12. It showed increasing about 0,4 °C.

Based on paired t-test showed that p-value 0,000 < 0,05. It means there difference premature infant’s body temperature after getting music therapy in intervention group and without therapy in control group. For detail at the below table 5.

Table 5
The Difference of Premature Infant’s Body Temperature After Getting Music Therapy in Control and Intervention Group

Group	Mean ± SD	t	Sig
Control (A)	36,8 ± 0,237	-12.296	0.000
Intervention (B)	36,4 ± 0,12		

DISCUSSION

1. Demographic Data

a. Based on Gender

The result of demographic data found that the most gender of the sample in control and intervention group were girl (53,3%) than boy (46,7%). This finding was consistent with the study such as Lubetzky (2009) to know the effectiveness Mozart Classical Music in premature infants using energy at relaxation period. The sample was more girl (12 infants) than boy (6 infants).

It was also consistent with Hariati’s study (2010) aimed to know the effectiveness Mozart Music Therapy to increase body weight and temperature. The sample in this study was more girl (19 infants) than boy (11 infants). Nevertheless, the findings aren’t consistent with the study was conducted by Zeitlin et al. (2003) which found that 50,8% premature infant was boy.

Based on Lubetzky’s study (2009) gender or sex was not related to increase body temperature in premature infants.

b. Based on Age

This study was conducted at age minimal 3 days. The result found that the mean of age in intervention group was 9 days, while the mean of age in control group was 12 days.

This findings was supported by these studies such as Suni (2010), Lubetzky (2009), and Standley (1998) about the effectiveness music therapy to health's premature infants found that infant's age was about 3 days. Infants with minimal age 3 days was selected in this study cause infant have been able to adapt with extra uterine environment and at this age have been known if there is abnormalities such as hearing loss, etc. (Soewanto, 2012).

At this age, infants have heat forming mechanism through breaking brown fat so that occurs thermogenesis process without shivering. While, premature infant have brown fat is limited (Soedarmo et al., 2008).

c. Based on Gestation Age

The gestation age in this study was 31-35 weeks. Bobak (2004) classified gestational age become 3 types; gestational age 31-36 weeks called intermediate premature, 24-30 weeks called extremely premature, and 37 weeks called borderline premature. Wong, et al. (2008) also said that gestational age related to infant maturation. Fatimah and Wilda (2009) The

younger gestational age, growth of organs is not optimal.

Kliegman et al (2007) and Proverawati (2010) said that younger gestational age then respiration system immaturation and it also related to decrease premature infant's body temperature.

d. Based on Body Weight

This study showed that body weight in intervention group was 2080,33 gram while control group was 1921,87 gram. It means body weight in intervention group was bigger than control group.

Infants who have a large body surface to weight ratio will occur heatloss so much. Premature infants have less than normal body weight, so that they tend to occur hypothermia (Ayu, 2012).

2. Premature Infant's Body Temperature Before Getting Music Therapy

The finding result showed that the mean of body temperature before getting therapy in interventio group was about 36,5 °C, while in control group was about 36,4 °C. Based on unpaired t-tes found that p value $0,119 > (0,05)$ which means there was no difference premature infant's body temperature before getting music therapy in control and intervention group.

Normally infant's body temperature about 36,5°C-37°C, while premature infant's body temperature about 36,3°C-

36,9°C (Merenstein & Gardner, 2002). The result of this study found that higher than premature infant's body temperature in normally range was 37,04 °C. It could be said that this condition still be normal and hyperthermia occurs if body temperature > 37,5°C (Prawirohardjo, 2007).

3. Premature Infants's Body Temperature Before and After in Intervention Group

The result of paired t-test showed that the mean of body temperature before getting music therapy was 36,4 °C and then after getting therapy increased to 36,8 °C. The increasing body temperature was 0,4 °C. The statistic showed that p value $0,000 < (0,05)$. It means there was difference body temperature significantly before and after getting music therapy.

In this study, measurement body temperature before and after getting therapy was consistent with study was conducted by Cassidy (2009), it was measuring body temperature at 4 minute before getting therapy and after getting therapy.

Infants who listened to Mozart Classical Music could stimulate endorphine and serotonin secretion. They are kind of type morphine to make the body relax. Beside that, the music helps to find inner harmony because it will be easy to cope stress and pain. The music also change frequency

which abnormal back to normal and healthy (Meritt, 2003). It could be concluded that giving Mozart Classical Music Therapy has effect to stable premature infant's body temperature in normal range.

4. Premature Infant's Body Temperature Before and After in Control Group

The result of paired t-test showed that the mean of body temperature before was 36,5 °C and after (without getting therapy) was 36,0 °C. It showed that body temperature decrease about 0,5°C. It also found that p value $0,000 < (0,05)$. It could be concluded that there was difference before and after in control group.

5. Premature Infant's Body Temperature After Getting Music Therapy in Intervention Group and Without Getting Therapy in Control Group

The result showed that premature infant's body temperature in intervention group was 36,8 °C, while in control group was 36,0 °C. based on unpaired t-test showed that p value $0,000 < (0,05)$. It could be concluded that there was difference significantly after getting therapy in intervention group and control group without getting therapy.

This findings was consistent to Lommba (2012) said that music therapy can decrease anxiety so that resulting a good impact on vital signs. Infants who

listened Mozart classical therapy will be relax/ calm. It would give good impact on vital signs include body temperature.

Relaxation response will help regulation in premature infant's body temperature through reduction of heat loss. Infants will be lost in controlling thermoregulation at Rapid Eye Movement (REM). Based on Armon et al (2006), Cassidy and Standley (1995) found that music therapy will enhance restful sleep and reduce the active sleep.

Applying music therapy also can accelerate healing process. Some studies found that Mozart music therapy can stable respiration, heart rate, temperature, and blood pressure. The music also stimulate the release of endorphins, the body's hormones which give happy feelings (Djohan, 2006). Halim (2002) said that music results changing in brain waves and stress hormone.

CONCLUSION

the foremost finding of this study there was significantly difference premature infant's body temperature after getting Mozart Classical Music Therapy.

Therefore, suggestion for nursing administrator to apply Mozart Classical Music as a therapy for healing process. It also been suggested to parents who have premature infant to play Mozart Classical

Music in home because it help to stable premature infant's body temperature.

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