

Effect of Music on Physiological and Psychological Variables of Postoperative Mothers Who Underwent Lower Segment Caesarean Section

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Abstract: ***Introduction:** Music has long been known as a complementary technique in reducing pain. **Objectives:** 1.To evaluate the effect of music therapy on physiological variables during postoperative period. 2. To assess the effect of music therapy on psychological variables during postoperative period. **Methods:** A total of 40 patients, who had undergone lower segment caesarean section were selected. Alternative patients were allocated to receive music via headphones on 1st and 2nd postoperative days. Blood pressure, Pulse rate and Respiratory rate were recorded before and after the intervention period. Postnatal depression was assessed using Edinburgh postnatal depression scale on the 2nd post operative day. **Results:** There was a significant difference in terms of physiological variables after music therapy ($p < 0.05$). With respect to postnatal depression there was no significant difference noted between the groups up to two days ($P > 0.05$).*

Keywords: Lower segment caesarean section, Music, physiological variables, postnatal depression

1. Introduction

Music is there in the cycles of the season, in the migration of the birds and animals, in the fruiting and withering of plants and in the birth, maturation and death of ourselves. (Mickey Hart). Music gives a sense of wellbeing, relief and contentment. Music has been used to treat a variety of disorders like anxiety, depression, insomnia, stress, dementia, autism, acute brain injury, Parkinsonism disease, attachment disorders, chronic schizophrenia, multiple sclerosis and pain.¹⁻⁹ The link between music and medicine has existed for many years and the historical writings of the Egyptians, Chinese, Indians, Greeks and Romans describe music as a healing medium. The desirable sound of music has a wide range of psychological and physiological beneficial health effects among diverse population in different conditions.¹⁰

It has been proved that soft sounds with regular and low rhythms ("lullabies") are able to create an interaction between the unborn baby and even children born before the regular date of birth and the mother.¹¹ Yang et al studied the effect of music on anxiety alleviation in 120 antenatal mothers on bed rest. Anxiety levels decreased and physiological responses improved significantly in the women with music therapy while on bed rest.¹² A study conducted among 110 thai primiparous women during active phase of labour experienced significantly less sensation and distress of pain.¹³ Exposure to calming music can alleviate postoperative pain and anxiety, and improves the hemodynamic status of patients.¹⁴

Many developing countries use caesarean section in order to reduce maternal and infant mortality. 10% to 15% of births worldwide occur by caesarean section.¹⁵ In India the rate of caesarean section delivery has increased from 3 % to 17.2% between 1992-93 and 2015-16.¹⁶ This study is aimed to assess the effect of music on physiological

variables like blood pressure, pulse, respiration and psychological variables; post partum depression.

2. Objectives

- To evaluate the effect of music on physiological variables during postoperative period.
- To assess the effect of music on psychological variables during postoperative period.

3. Methodology

The investigator used Quasi -experimental design for the study. The study was conducted in the post operative ward (Obstetrics and Gynaecology) of Sree Mookambika Medical College Hospital in Kanyakumari District. The investigator obtained permission from the ethical clearance committee of Sree Mookambika Medical College Hospital. The postnatal mothers who underwent LSCS were the population.

The mothers posted for elective caesarean section were met before the day of surgery and mothers who had undergone emergency caesarean section were met after the surgery and consent was taken. Demographic variables were collected using interview schedule.

A total of 40 postnatal mothers were selected by purposive sampling method. The samples were assigned to experimental and control group alternatively. Mothers with pregnancy induced hypertension, eclampsia, gestational diabetes, post-partum haemorrhage, and mothers who developed post operative complications were excluded from the study. Post operatively both groups received the routine treatment. The mothers in the experimental group were asked to list their favourite music. In addition to that, on the 1st and 2nd postoperative days music was played for the experimental group in three sessions and each session

lasted for one hour (9 am-10 am; 1pm -2 pm; 5 pm – 6 pm).

Head phones were provided by the investigator. Physiological variables were measured at 8.45am in the

morning and 6.15 pm in the evening in both the groups along with the routine measurements. Post natal depression was assessed using modified Edinburgh postnatal depression scale at the end of the second day.

4. Major Findings

Table 1: Frequency and percentage distribution of demographic variables

N=40

Sl. No	Demographic variables	Experimental group n %		Control group n %	
1.	Age				
	20-24	8	40	5	25
	25-30	10	50	12	60
	>30	2	10	3	15
2	Type of Family				
	Joint	15	75	15	75
	Nuclear Family	5	25	5	25
3.	Gravida				
	1	8	40	6	30
	2	6	30	5	25
	3	6	30	8	40
	>3	0	0	0	0
4.	Type of Anaesthesia				
	General	5	25	2	10
	Spinal	15	75	18	90
5.	Type of Caesarean				
	Elective	14	70	9	45
	Emergency	6	30	11	55

Table -1 describes majority 10 (50%) of mothers in the experimental group were between the age group of 25-30; had come from joint families 15 (75%); were primigravida 8 (40%); underwent spinal anaesthesia 15 (75%) and were elective caesarean 14 (70%).

The control group, majority 12 (60%) of mothers were between the age group of 25-30; had come from joint families 15 (75%); were third gravida 8 (40%); underwent spinal anaesthesia 18 (90%) and were emergency caesarean 11 (55%).

Table 2: Comparison of Systolic blood pressure, Diastolic blood pressure, Pulse and Respiration in two groups on Day-1 N=40

Variables	Experimental group (n=20)			Control group (n=20)		
	Pre mean ±SD	Post mean ±SD	t-value (p)	Pre mean ±SD	Post mean ±SD	t-value (p)
S B.P	123.50±4.9	116.10±6.6	3.74(P=.001)	121.5±5.9	120.5±6.9	.46(P=.65)
D B.P	79.5±3.9	74.5±5.1	4.3(P=.00.)	83±6.5	80±6.4	1.5(P=.16.)
Pulse	81.2±4.9	78.0±3.4	2.4(P=.025)	77.80±5.2	77.7±5.4	.06(P=.95)
Respiration	20.1±2.5	18.5±1.8	2.18(P=.042.)	19.3±1.8	19.3±2.7	.00(P=.1)

S B.P – Systolic Blood pressure, D B.P – Diastolic Blood pressure

The experimental group showed significant difference between the pre mean scores and post mean scores of S B.P, D B.P, Pulse and Respiration on the first post operative day (p <0.05).

The control group showed no significant difference between the pre mean scores and post mean scores of S B.P, D B.P, Pulse and Respiration on the first post operative day (p >0.05).

Table 3: Comparison of Systolic blood pressure, Diastolic blood pressure, Pulse and Respiration in two groups on Day-2 N=40

Variables	Exp group (n=20)			Control group (n=20)		
	Pre mean ±SD	Post mean ±SD	t-value (p)	Pre mean ±SD	Post mean ±SD	t-value (p)
S B.P	118.50±6.7	114.50±5.1	.81(P=.017)	120.5±6.8	122.5±6.3	-1.00(P=.330)
D B.P	79±4.5	74±5.0	3.7(P=.002)	78.5±4.9	80.1±3.3	-1.22(P=.237)
Pulse	80.4±4.8	75.9±4.3	3.37(P=.003)	78±5	77±4	.759(P=.457)
Respiration	20.5±1.9	18.9±1.8	2.79(P=.012.)	19.4±1.4	18.5±2	2.015(P=.058)

S B.P – Systolic Blood pressure, D B.P – Diastolic Blood pressure

The experimental group showed significant difference between the pre mean scores and post mean scores of S B.P, D B.P, Pulse and Respiration on the second post operative day ($p < 0.05$). The control group showed no significant difference between the pre mean scores and post mean scores of S B.P, D B.P, Pulse and Respiration on the second post operative day ($p > 0.05$).

Table 4: Compression of Post partum depression in two groups on Day-2

Postpartum Depression Score	Experimental group		Control group	
	n %		n %	
0 - 9	20	100	20	100
10 - 20	0	0	0	0
20 - 30	0	0	0	0

Table 4 showed there was no significant difference noted between the groups with respect to postpartum depression ($p > 0.05$).

5. Discussion

The present study reports that patient selected who listened to music had better physiological variables. This study is consistent with the study by Bernardi L, et al who investigated the responses to six types of music (with differing rhythmic, harmonic, and melodic structures) in 12 musicians versus 12 non-musicians and measured cardiovascular, respiratory, and cerebrovascular variables and found that faster tempi induced significant increases in ventilation, breathing rate, systolic and diastolic blood pressures and heart rate and slower music had a proportionally smaller effect and raga induced a significantly larger fall in heart rate ($p < 0.01$)¹⁷

A meta-analysis by Loomba RS et al demonstrated that music therapy leads to a significantly greater reduction in Systolic Blood Pressure ($P > 0.001$), Diastolic Blood Pressure ($P > 0.001$), and Heart Rate ($P > 0.001$) in a variety of clinical settings.¹⁸ Bradt, Dileo and Potvin have shown that listening to music may have a beneficial effect on systolic blood pressure, heart rate, respiratory rate, quality of sleep and pain in persons with coronary heart disease.¹⁹

Chan MF et al did a randomised controlled trial among 42 elderly people; 21 in the experimental group and 21 in the control group. There were statistically significant reductions in geriatric depression scores and sleep in the experimental group.²⁰

A double blind placebo-controlled trial by Reza N et al among 100 women scheduled for elective caesarean section under general anaesthesia, were randomly allocated into two groups of fifty. Mothers in the music group were exposed to a compact disk of Spanish guitar after induction of anaesthesia up to the time of wound dressing. The control group was exposed to white music. Post operative pain and anxiety were evaluated by visual analog scale (VAS) up to six hours. There was not statistically significant difference in VAS for pain between two groups up to six hours postoperatively ($P > 0.05$). There were not statistically significant difference between two groups regarding postoperative anxiety score ($P > 0.05$).²¹

6. Conclusion

Even if playing a secondary role in managing the physiological variables music therapy is non-invasive, has no negative side effects, is inexpensive to hospitals and

patients, and can be completely personal. A mother given music therapy during hospital stay can also benefit from the recollection of pleasant memories.

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