



The Effect of Progressive Muscle Relaxation on Post Caesarean Section Pain and Functional Activities Limitation - Randomized Controlled Trial

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Abstract

Background:

Pain and Functional activity limitations are the most common complaints of the women after caesarean section. Progressive muscle relaxation has been shown to relieve pain and improve Functional activity in post caesarean section women. We designed this study to examine if PMR reduces Pain and improve Functional activity.

Methodology:

We included 30 participants with the age of 20 to 45 years. Participants were randomly assigned into two groups i.e. PMR in addition with conventional therapy and Conventional Therapy (Control group).

Result:

After the intervention, both groups showed significant improvement ($p < 0.05$) in measures of NPRS and Patient Specific Functional Activity scale.

Conclusion:

These data suggest that incorporating PMR in post C-section physical therapy session is effective in reducing pain and improving Functional activity.

Keywords:

C-section, Progressive muscle relaxation technique, Physical activity, Pain.

INTRODUCTION

Lower segment caesarean section is procedure where the making of incision is on the lower abdomen to the deliver the baby.¹

There are many advantages of the caesarean section i.e. Post-operative comfort is more, Less chances of the wound dehiscence, Less chances of the incisional hernia, Reduced risk of perineal vaginal injury, Obstetric shock, Early postpartum haemorrhage.^{2,3,4,5,6,7}

However there are some disadvantages of Caesarean section i.e. neonatal intensive care unit admission, longer hospital stays, Risk of the anaesthesia, Post-operative pain.⁴

Women with C - section surgery has both physical and psychological problems. Physical problems include: incision pain, limitation of the doing activity, gastrointestinal Disturbance, Anaesthesia complication. Psychological problems include: anxiety, depression, loss of the control, disturbed body image .caesarean pain affects the daily activity performance and it contribute to persistent post-operative pain. Caesarean pain characterized as acute and similarly connected the damage caused to the inflammatory reaction derived from traumatic operation.⁶

Progressive muscle relaxation technique was developed by Edmund Jacobson in the literature science 1938. This technique is used to induce a state of deep relaxation through involving a systemic sequential muscle tension for 5-7 seconds followed by relaxation. During the intervention of the therapy it was instructed to take the deep breath and hold it for 5 to 10 seconds and then exhale the breathe slowly by lips, which will help to get the relaxation state and get the benefits of the deep breathing exercise. Progressive muscle relaxation technique is one of the non-pharmaceutical method used to treat the post-operative pain and increase the physical activity after the caesarean section surgery.⁷

However the few articles Progressive muscle relaxation technique relieve the pain and improve physical activity. Therefore the aim of the study was determine to Progressive muscle relaxation technique can reduce pain and improve physical activity in Post - Caesarean section women.

The purpose of this RCT was to examine the effects of Progressive muscle relaxation technique on Pain and Functional Activity in comparison with conventional therapy.

METHODOLOGY

Study Design: Randomized Controlled Trial

Sampling Method: Randomized Block Technique

Sample Size: 30

Inclusion criteria

- Age: 20 to 45
- Patients who are willingly to participants in study.
- Those who are primary of repeat caesarean section.
- Early post caesarean patients.

Exclusion criteria

- Women who have developed major complication in post caesarean such as severe anaemia ,heart disease, post-partum haemorrhage, severe pregnancy, hypertension, Eclampsia, postpartum psychosis, musculoskeletal problem or urinary infection.
- Multiple births
- Delivery with operative complication.
- Psychiatric disorder such as depression or anxiety.

Each of them was explained about the study and its benefits and written consent was obtained from every Women. Pain and Functional Activity was assessed by using Numeric Pain Rating Scale (NPRS) & Patient Specific Functional Activity Scale (PSFA-S) respectively. The Participants were then randomly divided in 2 groups:

Group A - Progressive Muscle Relaxation

Group B - Conventional therapy

Progressive Muscle Relaxation (Group A):

- Begin with deep breathing exercise. Then slowly exhale out with mouth, the navel pulling in towards the spine. Repeated 3-5 cycles of deep breathing.
- Tense and release muscles.
- Starts with feet clenching toe and press heels towards the ground. Squeeze tightly for 10 seconds and the release it.
- Then flex feet in pointing toes up towards the head, hold it for 10 seconds and then slowly release while counting 1 to 10.
- Work on the right leg squeeze thigh muscle hold it for 10 seconds then slowly release it.
- Repeat on the left leg, after that squeeze the buttocks muscles hold it for 10 seconds and then release it.
- After that squeeze abdomen muscles hold it for 10 seconds and then slowly release it.
- Tensing the chest muscles by taking deep breathing, hold it for 10 seconds and then slowly release it.
- Open mouth widely enough to stretch the hinges of jaw, hold it for 10 seconds, and then release it.
- Clench eyes tightly hold it for 10 seconds and then release it.
- Raise eyebrows and tight the forehead, hold it for 10 seconds then release it.
- End up with few deep breaths.

Technique was used after the effects of anaesthesia are decrease and women on her conscious state of mind. Pre and Post – Therapy NPRS and Patient Specific Functional Activity scale was taken.

Duration: 30 minutes - Thrice a day for 3 days.

In addition with PMR, Conventional therapy were given to Group A.

Conventional therapy (Group B):

- Starts with deep breathing exercise for 3 repetitions.
- After deep breathing 10 repetitions of thoracic expansion, huffing technique and splinted coughing.
- 10 repetition of knee bending and leg bracing.
- End up the session with breathing exercise.

Technique was used after the effects of anaesthesia are decrease and women on her conscious state of mind. Pre and Post – Therapy NPRS and Patient Specific Functional Activity scale was taken.

Duration: 30 minutes - Thrice a day for 3 days.

DATA ANALYSIS

Data were analysed using SPSS statistical software using an intention-to-treat approach. Prior to all hypothesis testing, independent sample t-tests were conducted to examine whether significant mean differences existed in demographic, NPRS and Functional activity variables among the two groups at baseline. We examined whether outcomes changed differentially from baseline to post intervention.

RESULT:

All the patients completed the treatment session without interruption and having no other complication were observed during the treatment session.

Table no.1: The Mean values of Group A and Group B according to pre and post NPRS Scale

Group	Pre/Post NPRS Scale	Mean	Number	Std. Deviation
Group A	Pre	9.53	15	0.61
	Post	3.86	15	1.14
Group B	Pre	9.4	15	0.61
	Post	6.26	15	1.34

N=number, PRE=Pre NPRS Scale, Post=Post NPRS

Table no.2: The Mean value of Group A and Group B according to Pre and Post patient-Specific Functional Scale.

Group	Pre-Post PSF Scale	Mean	No	Std. Deviation
Group A	Pre	9.13	15	0.95
	Post	4	15	1.15
Group B	Pre	9	15	0.96
	Post	5.8	15	1.46

Table No.3: The Pre and Post values of between group Comparisons: Average improvement in T-Value and P-value.

Group	Pre-Post Comparison	Average Improvement	T-Value	P-Value	Result
Group A	Pre-Post	5.67	8.37	0.00	P<0.05 SIG
Group A	Pre-Post	5.13	3.15	0.1	P<0.05 SIG
Group B	Pre-Post	3.14	1.17	0.00	P<0.05 SIG
Group B	Pre-Post	3.2	2.14	0.1	P<0.05 SIG

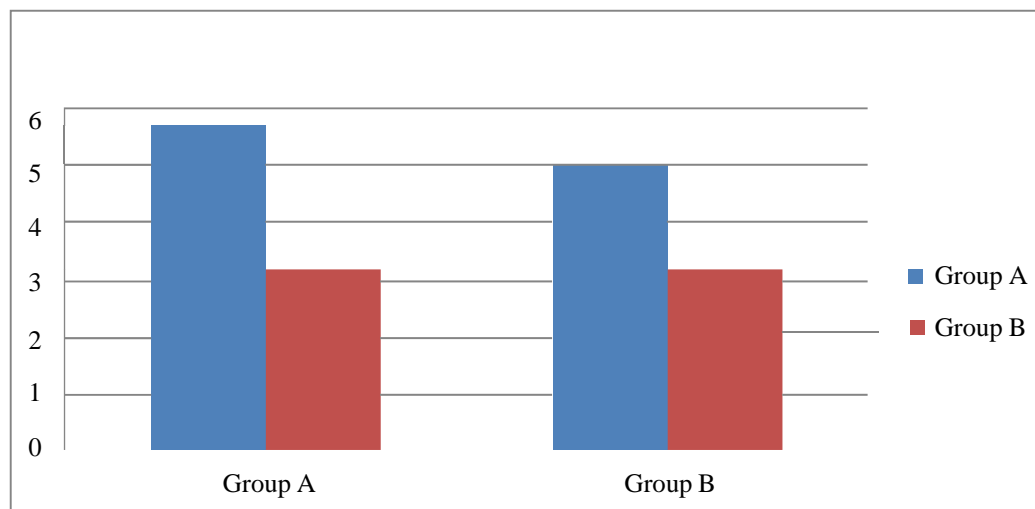


Fig.No.1: Average improvement in T-Value and P-value between groups

However, statistically significant result were noticed in both the groups, clinically it was observed and also observed that PMR technique had greater effects than conventional therapy.

DISCUSSION

The result of the present study is in line with at least four studies. First, Devmurari and Nagrale (2018) who studied "Effectiveness of Jacobson's PMR technique for pain management in post-caesarean women". They found that 100% of experimental group after intervention had pain ranging from 0 to 5 compared to 17.6% of control group. There is significant difference in mean values between pain scores of control and experimental group on VAS score. They further concluded that the pain is more reduced in experimental than control group.⁸ Second, Devi et al (2017) who studied "Effect of PMR on post-operative analgesia" among patients with abdominal surgery in India during the first two days post-operative. They reported that PMR was very effective in pain relieve among study group compared to control group. They further added that PMR helped their patients to overcome the distressing feelings during post-operative period and improve their quality of life.⁹ Third, Gupta et al (2016) who studied "Effectiveness of PMR technique on physical symptoms among patients receiving chemotherapy". They elaborated that around two thirds (63.3%) among their study participant had only mild pain post intervention compared to non-before it. They further added that none of their study group complained from severe pain post intervention compared to 100% before intervention¹⁰. Fourth, Paula et al (2002) who studied "the use of PMR technique for pain relief in gynecology and obstetrics". Their subjects were patients with abdominal surgery for obstetrics or gynecologic reason. They concluded that PMR significantly decreased pain perception among study group compared to control group. They further recommended that health care team should prepare their patients to apply PMR during the preoperative period to be used as a pain control method during the post-operative period.¹¹

The result of the current study is also in line with relevant literatures. PMR may work to decrease post Cs pain through numerous mechanisms. First, PMR is effective in decreasing stress and consequently stress hormones (cortisol, epinephrine, catecholamines). Second, it can inhibit sympathetic and stimulate the parasympathetic nerves by blocking the feedback pathway from the mind to muscles and consequently prevent the biological response to pain. So, it may lower blood pressure, heart rate and metabolic rate (Avianti et al, 2016 & Topcu and Findik, 2012). Third, PMR may manipulate the hypothalamus by concentration on the positive sensation of deep relaxation state during the intervention so, the stress impulses from the hypothalamus is decreased or even inhibited.⁷ Fourth the deep breathing technique during the intervention can increase oxygen

saturation, decrease the oxidative factors and consequently, pain. Fifth, PMR may help the secretion of endogenous endorphins, decrease the secretion of adrenal hormones, and improve blood circulation (Peciuliene et al 2015).¹²

It is expected that all the above mentioned mechanism of PMR over the course of the 3 days post C-section is likely to have resulted in decreasing pain and improving functional gains reported in this study.

CONCLUSION

Based, on the results of the current study, it is concluded that progressive muscle relaxation techniques have significant effects in reducing pain and improving Functional activity of the women who has undergone Caesarean section.

FUTURE RECOMMENDATION

- Based on the findings of the current study Progressive muscle relaxation technique is easy to learn and there is no side effects of therapy , therefore these technique should be involved in the treatment protocol management after caesarean section.
- Patient's education about PMR technique should be implemented with all post caesarean women to help relieve pain.

FUTURE RESEARCHES:

- Replication of the study using a large probability sample from a broad geographical area to allow greater generalization of the results.
- Exploration of the effect of PMR on stress, fatigue, and quality of life during postpartum

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