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A Comparative Study of Effectiveness between Diaphragmatic Breathing and Resistive Inspiratory Muscle Training on Fatigue during Pregnancy

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***Abstract*— Background: Physical inactivity, increased weight and alterations in the pulmonary functions cause feeling of low energy and fatigue amongst pregnant women, which hampers their quality of life.**

Objective: This study was done to compare the effect of Inspiratory Muscle Training and Diaphragmatic Breathing Exercises on fatigue during pregnancy.

Design: Experimental Study Design

Method: This was a pre post parallel study group design done on a sample size of 32 pregnant women, who were randomly divided between two groups. One group received Inspiratory Muscle Training (IMT) and another received Diaphragmatic Breathing Exercise (DBE). The outcome measure was fatigue, which was analysed at baseline and after the intervention of 4 weeks.

Result: Inspiratory muscle training was found to be beneficial to reduce fatigue during pregnancy.

Conclusion: The present study suggested that the performance of IMT in pregnancy during third trimester helps to reduce fatigue.

***Index Terms*— Fatigue, Inspiratory Muscle Training, Diaphragmatic Breathing Exercises.**

I. Introduction

Highlight Pregnancy is a physiological phenomenon which is accompanied with various physical and psychological changes causing nausea, vomiting and fatigue affecting the maternal quality of life.[1,2] Many prospective studies have shown that fatigue is one of the common problems amongst pregnant women. It has been suggested that the potential causes of fatigue during pregnancy are physical inactivity, medical conditions and respiratory distress.[3] Various previous studies have reported the benefit of inclusion of daily exercises during pregnancy on reducing fatigue. Barakat,et.al, in his study, reported that the previously sedentary pregnant women have improved quality of life.[4] C.Ward-Ritacco,et.al, in his study, concluded that the resistance exercises improves the feeling of increased energy and decreased fatigue during second and third trimesters.[5] This study was intended to see the effect of IMT on fatigue during pregnancy.

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II. Materials and Methods

This was a prospective experimental study design done on 32 women during third trimester of pregnancy with age group of 20-30 years in primigravida and having dyspnea that affects their daily living. The females with the history of cardiovascular diseases, patients with thyroid problems and history of any psychological disease like anxiety or depression were excluded from the study. Participants were explained about the aim and procedure of the study and informed consent was taken. Fatigue was measured by Multidimensional Assessment of Fatigue Scale.

III. Protocol

The participants (n=32) were randomly allocated between two groups i.e. IMT (inspiratory muscle training group and DBE group (Deep breathing exercises). IMT group (n=16) received supervised Inspiratory muscle training for 15 minutes, 5 days per week for 4 weeks. Each session lasted for 2 minutes and comprising of 7 sessions in it with the help of an Inspiratory training threshold device followed by 1 min of rest in-between the sessions. Throughout the training session, subjects were allowed to choose their breathing pattern. Subjects in Diaphragmatic Breathing group (n=32) performed diaphragmatic breathing exercise for 15 minutes, 5 days for 4 weeks. Each intervention involved a 15 minute resting breathing session and a 15 minute diaphragmatic session consequently. During diaphragmatic breathing, they were instructed to inhale as deeply as they could while their abdomen expanded with 5 seconds hold, and exhale as slowly as they could while their abdomen contracted.

IV. Result

32 patients were analyzed at baseline and after the intervention of four weeks. There was no significant difference between the groups at baseline as shown in Table1.

Table 1:
Baseline characteristics of the participants:

Variables	IMT Group Mean ± S.D	DBE Group Mean ± S.D	*p* value
Age	24.91 ± 2.8	25.32 ± 2.9	0.9
BMI	22.96 ± 5.34	21.74 ± 5.29	0.2
Fatigue	31.1 ± 4.16	30.2 ± 4.12	0.6

Table 2:
Changes in Fatigue level at baseline and after the intervention in the IMT and DBE Group:

Fatigue	Pre Intervention Mean ± SD	Post Intervention Mean ± SD	*p*
IMT group	31.1 ± 4.16	22.33 ± 6.4	0.002**
DBE group	31.38 ± 3.78	28.33 ± 5.2	0.3

****: Highly Significant**

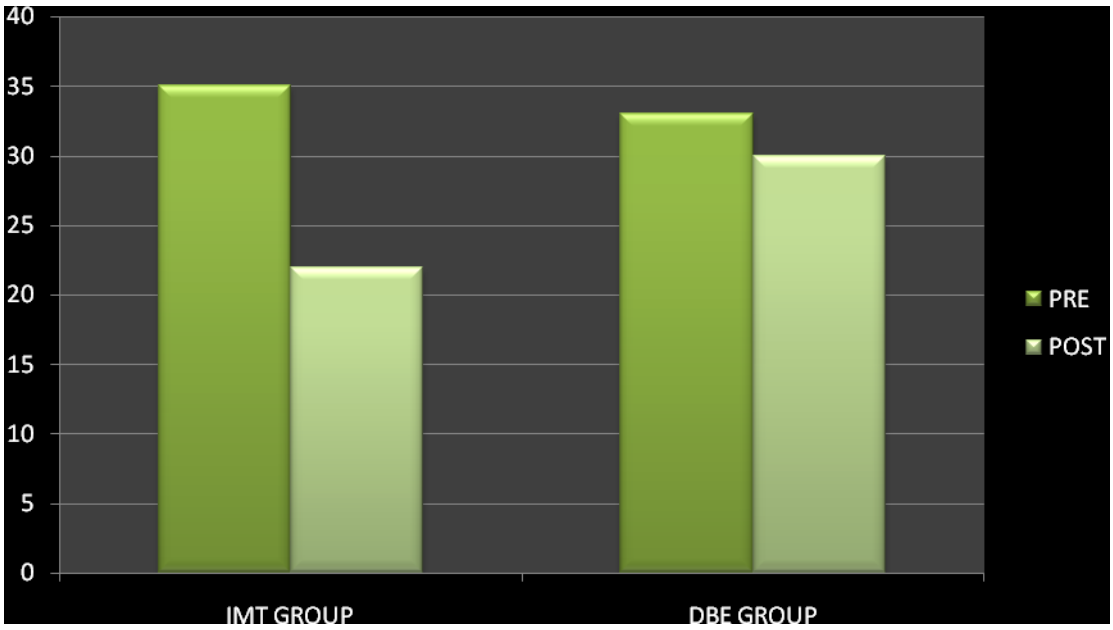

Figure 1: Changes in the level of Fatigue at baseline and after intervention between both the groups.

V. Discussion

Fatigue is determined as one of the commonest most neglected concern among pregnant women. Physical inactivity due to various reasons, like, increased weight, feeling of low energy, dyspnea and changes in pulmonary functions might contribute to the self perception of fatigue.[6] In a previous study, it has been reported that fatigue during pregnancy can lead to obstetrics risks, further predicting chances of caesarean delivery.[7] This study shows a statistical improvement in the fatigue score in the IMT group post intervention as compared with the DBE group. This study is the first time intervention for declaring a positive effect of Inspiratory muscle training in pregnancy during third trimester. Our results are encouraging to use IMT as a part of rehabilitation protocol during this phase of pregnancy. Although it was a pilot study with small sample size therefore, there is a need for further future studies with the larger sample size. Future studies can explore and compare the effect of IMT between the trimesters and different intensities of IMT during this phase.

VI. Conclusion

The present study shows that there was a significant increase in Inspiratory Muscle Training group in pregnancy during third trimester. The result suggested that the performance of IMT in pregnancy during third trimester helps to reduce fatigue (MFS).

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