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Impact of Inspiratory Muscle Training versus Diaphragmatic Breathing Exercises on Fatigue during Pregnancy

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Abstract: **Fatigue during pregnancy reduces quality-of-life and can predict cesarean delivery after controlling for age and obstetrical risks 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. This is the first time intervention to investigate the effect of inspiratory muscle training and compare it with Diaphragmatic breathing exercises. This study was done to compare the effect of Inspiratory Muscle Training and Diaphragmatic Breathing Exercises on fatigue during pregnancy. The present study was done on a sample size of 12 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. The result of the present study concludes that Inspiratory muscle training was found to be beneficial to reduce fatigue during pregnancy.**

Keywords: **Inspiratory Muscle Training, Diaphragmatic Breathing Exercises, Pregnancy.**

1. INTRODUCTION

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 the fatigue is one of the common problems in approximately 70% of pregnant women. It has been suggested that the potential causes of fatigue during pregnancy are physical inactivity, rising levels of hormones, other medical conditions, and psychological and respiratory distress.[3,4]. Studies have shown that the level of fatigue increases throughout the period of pregnancy, however, some studies suggest that a pregnant woman experiences fatigue only during first and third trimesters and not in second trimester.[5,6] 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.[7] 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.[8] There has not been done many studies on fatigue during pregnancy has not been studied, therefore, its frequency must be extrapolated from studies addressing a broad range of symptoms experienced by pregnant women. In a study survey, 90 percent of one sample of 20 women reported feeling tired at some time during their pregnancy [9], whereas in another study all 74 pregnant women reported physical fatigue; 34 percent said it lasted most or all of the time, 55 percent found it distressing, and 13.5 percent rated it as severe (L. Hentz, C. DiIorio, D. 194 BIRTH 20:4 December 1993 van Lier, unpublished data). A literature review described several possible physiologic and psychological changes in pregnancy that could affect fatigue levels, including increased oxygen consumption; fetal demands; cardiovascular, respiratory, urinary, and metabolic changes; and psychological stressors from adjustment to pregnancy and childbirth [10]**.** An increased level of progesterone, known to cause drowsiness, may also contribute to fatigue**.**[11]

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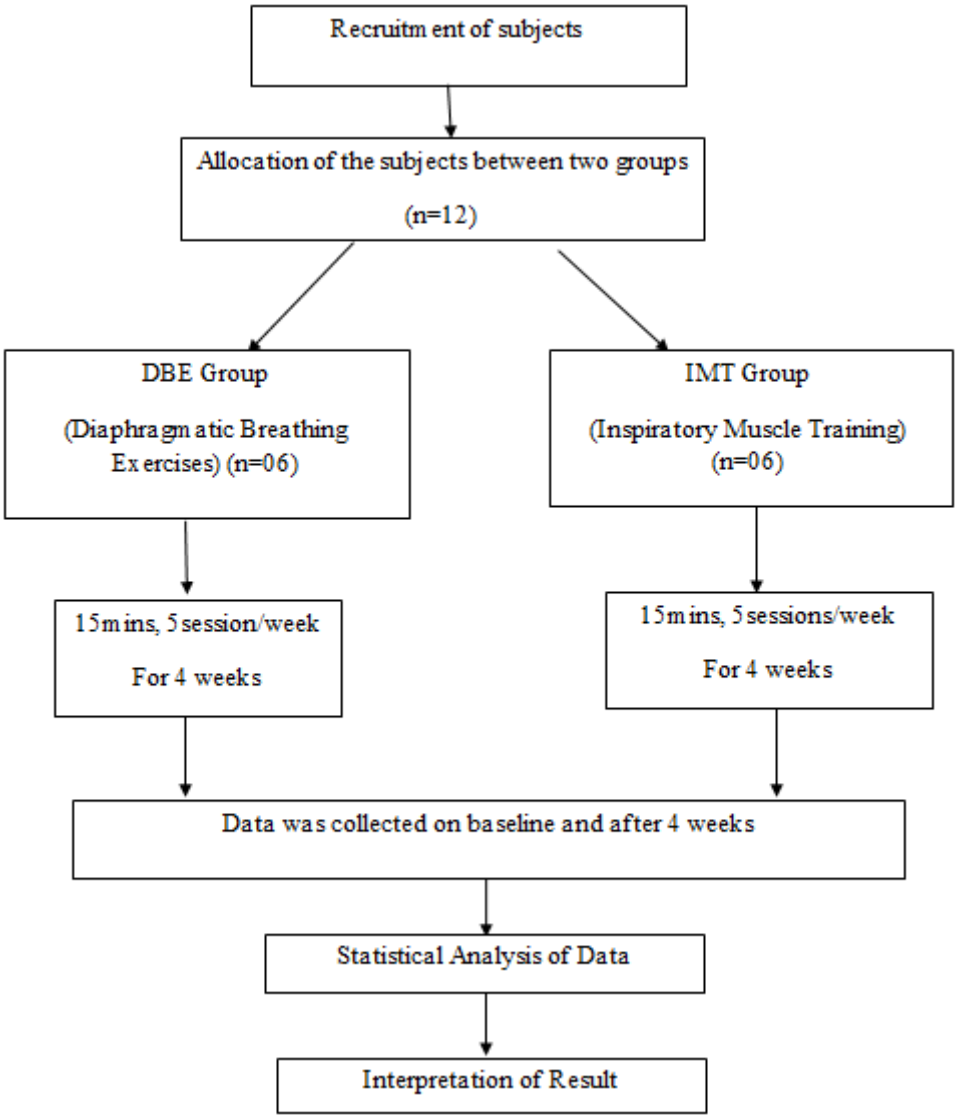
2. MATERIALS AND METHODS

This was a prospective experimental pilot study conducted at SGT Hospital, Gurgaon. This study was done on 12 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.

Protocol:

The participants (n=12) were randomly allocated in two groups i.e. IMT (inspiratory muscle training group and DBE group (Deep breathing exercises). IMT group (n=06) 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=06) 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.

PROTOCOL:



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3. RESULT

12 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 Table 1.

Table 1: Baseline characteristics of the participants:

Variables	IMT Group Mean ± SD	DBE Group Mean ± SD	*p* value
Age	24.91 ± 2.8	25.32 ± 2.9	0.9^{NS}
BMI	22.96 ± 5.34	21.74 ± 5.29	0.2^{NS}
Fatigue	31.1 ± 4.16	30.2 ± 4.12	0.6^{NS}

NS: Non significant

Fatigue: In the Control group, the mean change in the level of fatigue declined from 31.38-28.33, and it was not found to be significantly different (shown in table 2). Whereas, in the IMT group, the level of fatigue was found to be declined from 36.38-22.33, and it was found to be significantly different (p=0.001) as shown in Table 3.

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

Variables	Pre Intervention Mean ± SD	Post Intervention Mean ± SD	*P*
Fatigue	30.2 ± 4.12	28.33 ± 6.4	0.06^{NS}

Table 3: Changes in Fatigue, at baseline and after the intervention in the IMT Group:

Variables	Pre Intervention Mean ± SD	Post Intervention Mean ± SD	*p*
Fatigue	31.1 ± 4.16	22.33 ± 6.4	0.002**

****: Highly Significant**

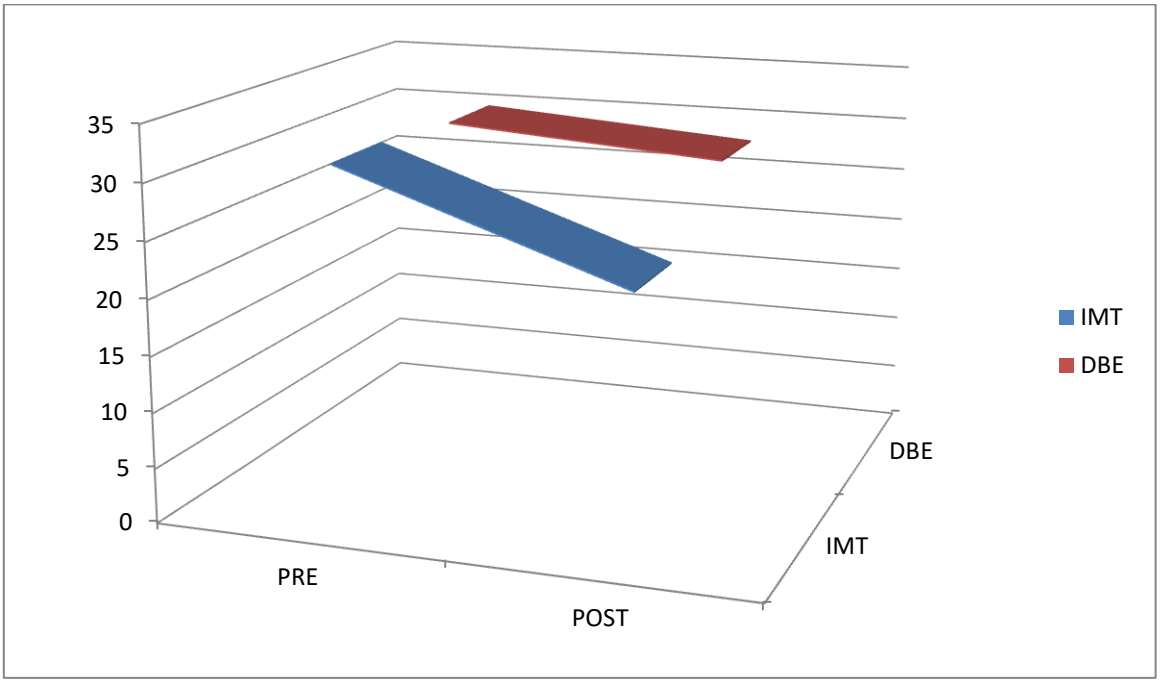

Figure 1: Shows the changes in Fatigue at baseline and after intervention between both the groups.

4. DISCUSSION

Fatigue is determined as one of the commonest most neglected concern among pregnant women. Many prospective studies have shown that the level of fatigue during pregnancy had a significant impact on the daily living. Women reported of having to reduce the amount and the duration of their normal work routine due to sensation of fatigue and having to take consistent rest in between work.[12] 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.[13] In a previous study, it has been reported that fatigue during pregnancy can lead to obstetrics risks, further predicting chances of caesarean delivery.[14] It has also been suggested that fatigue is more common in Primigravida, therefore it is important to educate and prepare a woman of changing physiology during pregnancy. Fatigue has also been associated with nausea and vomiting. Many studies have reported that feeling of nausea increases with the increasing level of fatigue and so reducing the feeling of fatigue may help in decreasing the sensation of nausea and vomiting.[15] In a study designed with fatigue as the dependent variable, indicated that fatigue may precipitate nausea during pregnancy.[16] Most likely a dynamic interplay occurs between the two, leading to the possibility that measures taken to alleviate one may also ameliorate the other. It has been suggested that controlling fatigue may lead to more effective control of nausea and vomiting by decreasing nausea-related discomfort. Assisting women in managing their day to accommodate several uninterrupted rest periods, including work breaks, may be effective in reducing fatigue levels and subsequently decreasing nausea. This study shows a statistical improvement in the fatigue score in the IMT group post intervention as compared with the DBE group.

Strength and limitations of the study:

This study is the first time intervention showing 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 third trimester in pregnancy. Since 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 on fatigue between trimesters.

REFERENCES

[1] O'Connor PJ, Poudevigne MS, Johnson KE, de Araujo JB, Ward-Ritacco CL. Effects of Resistance Training on Fatigue-Related Domains of Quality of Life and Mood During Pregnancy: A Randomized Trial in Pregnant Women With Increased Risk of Back Pain. Psychosomatic medicine. 2018 Apr 1;80(3):327-32.

[2] Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. Current Opinion in Psychiatry. 2012;25:141-8

[3] Zib M, Lim L, Walters WA. Symptoms during normal pregnancy: a prospective controlled study. Aust N Z J Obstet Gynaecol 1999;39:401–10.

[4] Matthews A, Haas DM, O'Mathúna DP, Dowswell T. Interventions for nausea and vomiting in early pregnancy. Cochrane Database of Systematic Reviews. 2015(9).

[5] Affonso DD, Lovett S, Paul SM, Sheptak S. A standardized interview that differentiates pregnancy and postpartum symptoms from perinatal clinical depression. Birth. 1990 Sep;17(3):121-30.

[6] Pugh LC, Milligan RA. Patterns of fatigue during childbearing. Applied nursing research. 1995 Aug 1;8(3):140-3.

[7] Barakat R, Pelaez M, Montejo R, Luaces M, Zakynthinaki M. Exercise during pregnancy improves maternal health perception: a randomized controlled trial. Am J Obstet Gynecol. 2011;204:402 e1–7

[8] Ward-Ritacco C, Poudevigne MS, O'Connor PJ. Muscle strengthening exercises during pregnancy are associated with increased energy and reduced fatigue. Journal of Psychosomatic Obstetrics & Gynecology. 2016 Apr 2;37(2):68-72.

[9] Drake ML, Verhulst D, Fawcett J. Physical and psychological symptoms experienced by Canadian women and their husbands during pregnancy and the postpartum. *J Adu NUTS* 1988; 13~436-440.

[10] Poole CJ. Fatigue during the first trimester of pregnancy. *J Obstet Gynecol Neonatal Nurs* 1986;15(5):375-379.

[11] Quilligan EJ. Maternal physiology. In: Danforth DN, ed.*Obstetrics and Gynecology*, 4th ed., Hagerstown, MD:Harper & Row, 1982.

[12] Reeves N, Potempa K, Gallo A. Fatigue in early pregnancy: An exploratory study. Journal of Nurse-Midwifery. 1991 Sep 10;36(5):303-9.

[13] Physical Activities Guidelines Advisory Committee. Physical activity guidelines advisory committee report. Washington (DC): US Department of Health and Human Services. 2008.

[14] Chien LY, Ko YL. Fatigue during pregnancy predicts caesarean deliveries. J Adv Nurs 2004;45:487–94

[15] Van Lier D, Manteuffel B, Dilorio C, Stalcup M. Nausea and fatigue during early pregnancy. Birth. 1993 Dec;20(4):193-7.

[16] DiIorio C. First trimester nausea in pregnant teenagers: Incidence, characteristics, intervention. Nurs Res 1985 ;34:372-374.

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