International Journal of Yoga, Physiotherapy and Physical Education
ISSN: 2456-5067
Impact Factor: RJIF 5.24
www.sportsjournal.in
Volume 3; Issue 4; July 2018; Page No. 01-04

Relationship of diastasis rectus Abdominis with low back pain and functional ability in multiparous women: A Correlational study

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Abstract
Background and purpose: Diastasis rectus abdominis is a separation between two bellies of rectus abdominis. It is more common in multiparous women due to repeated episodes of stretching during pregnancy. This may produce musculoskeletal complaints such as low back pain. To find out the correlation of low back pain and diastasis rectus abdominis in multiparous women between the age group of 35-45 years.
Objectives: 1) To assess low back pain using visual analogue scale.2)To assess the disability due to low back pain using Oswestry low back pain disability questionnaire.3)To assess the diastasis in multiparous women.4) To find the correlation of diastasis rectus abdominis with low back pain in multiparous women.
Subjects: 30 participants- Multiparous women between the age group of 35-45 years were included in the study after they gave their consent.
Method: A correlation study was conducted in 30 multipara women within the age group of 35-45 years. These participants were then assessed for diastasis rectus abdominis using diastasis recti test. The mean VAS of low back pain was 6.16. The mean disability due to low back pain was 40.3%.The mean of diastasis recti was 3 cm. The test was statistically significant by using unpaired t-test and coefficient of correlation test.
Result: The result of present study shows that there was a negative correlation between diastasis rectus abdominis and low back pain in multiparous women within the age group 35-45 years.
Conclusion: There is negative correlation between low back pain and diastasis rectus abdominis in multiparous women.

Keywords: diastasis rectus abdominis, low back pain, multipara women, disability, diestatis recti test, oswestry low back pain disability questionnaire

Introduction

Low back pain is a common neuro-musculoskeletal problem affecting 40% of population worldwide at some point in their life and causes significant disability with loss of productive working hours [17]. The common sign and symptoms are local or radicular pain, tenderness, spam, which is aggravated by movement with loss of function [2].

Diastasis recti abdominis (DRA) is defined as a separation of the two muscle bellies of rectus abdominis [1]. DRA is often described in relation to pregnancy, but occurs both in postmenopausal women [2] and in men [3, 4]. Todate, there is also scant knowledge about risk factors, but factors such as high age, multiparity, caesarean section, weight gain, high birth weight, multiple pregnancy, ethnicity, and childcare have been proposed [2, 8-11]. Diastasis recti abdominis (DRA) is a separation between the left and right side of the rectus abdominis muscle, which covers the front surface of the belly area. It is commonly detected as normal condition in newborns and seen most frequently in premature and African American infants. This condition can be diagnosed by physical examination, and must be differentiated from hernias [5]. Due to close relationship between the pelvic floor and abdominal muscles, performance of the pelvic floor muscle could be affected by a decrease in abdominal muscle function associated with DRA [6]. Urinary incontinence, fecal incontinence and pelvic organ prolapse occur with the loss of the support-related functions of the pelvic floor muscles [13, 14, 15]. DRA may play an important role in the development, persistence and recurrence of conditions related to impairments of the pelvic floor region. It has been claimed that DRA may change posture and give more back strain due to reduced strength and function leading to low back pain [12, 13].

DRA was measured by palpation 4.5 cm above, at and 4.5 cm below the umbilicus [6]. The women were tested in a standardised supine crock-lying position with arms crossed over the chest. They were instructed to perform an abdominal crunch till the shoulder blades were off the bench. Palpation of DRA in postpartum women has shown to have goodintrarater reliability (Kw>0.70) and moderate inter-rater reliability (Kw=0.53) [16]. Observed protrusion along the linea alba was categorised as DRA even if the palpated distance was <2 fingerbreadths.

Oswestry disability index is a good functional scale because it

deals with activity of daily living & therefore is based on the patient response and concerns affecting daily life. It is used to measured patient perceived functional disability e.g., work status, difficulty caring for oneself. It is most commonly used functional back scale. It is calculated by dividing the total score (1-6) by number of section answered and multiplying by 100[18]. The reliability of Guajarati version of ODI is 0.92 and validity is 0.76, so it has excellent psychometric properties. Therefore, it can be used in evaluating the disability amongst Gujarati population with LBP for both clinical and research purposes). The reliability of VAS is r = 0.94 and the validity of VAS is 0.99, so it has excellent psychometric properties. Therefore, it can be used in evaluating the pain intensity in low back pain [20].

Very less research has been done on the relationship between diastasis recti and low back pain, hence, there was need to find the correlation of LBP and Diastasis rectus abdominis in multiparous women.

Aims of the study were1) to assess low back pain using visual analogue scale. 2) To assess the disability due to low back pain using Oswestry low back pain disability questionnaire. 3) To assess the diastasis in multiparous women. 4) To find the correlation of diastasis rectus abdominis with low back pain in multiparous women

Methodology

This study was a corelational study. Total number of Sample size was calculated to be 30 subjects. Referred patients of low back pain from Obs and Gynae department from various hospitals of Surat were screened for inclusion. All patients signed the written consent form prior to participation. Complete preliminary examination were done for the subjects using self-administered questionnaire. The subjects were screened based on the inclusion and exclusion criteria. Introduction about the study was given to all the participants. The outcome selected in this study was VAS, ODI and Diastasis Recti.

30 multipara women within the age group of 35-45 years participated in the study after the approval of institutional ethical committee. The inclusion criteria were; Full term normal delivery, Multiparous women Age group 34-45,Women willing to participate in the study. Post partum 6 months to 2 years, Low back pain since 6 months,Vas score minimum 5 and moderate disability in odi score. Exclusion criteria includes Females undergone any abdominal surgeries.,Any orthopaedic surgeries in past 6 months, Low back pain radiating to the lower limb., Hesistant females, Uncooperative patient, Female on hormone replacement therapy, Already on exercise programme.

Low back pain was assessed by using vas scale, functional ability was evaluated by oswestry disability index. Gujarati version of ODI questionaire was used. DRA was measured by palpation 4.5 cm above, at and 4.5 cm below the umbilicus.[6] The women were tested in a standardised supine crook-lying position with arms crossed over the chest. They were instructed to perform an abdominal crunch till the shoulder blades were off the bench. Palpation of DRA in postpartum women has shown to have good intrarater reliability (Kw>0.70) and moderate inter-rater reliability (Kw=0.53) [16].

Statistical Analysis

Descriptive stastistics were carried out for VAS, ODI and Diastasis recti. The normality of the data was checked by Kolmogorov-Smirnov.The data was normally distributed with $p>0.05$. Pearson's correlation test was used to find the relationship between the outcome measures. $p<0.05$ was considered statistically significant. All statistical analyses were performed using SPSS Version 20.

Result

The demographic data included, 30 multiparous women with age group ranging 35-45 years participated in the study.The no. of pregnancy were,17 females with 3 pregnancy,13 females with 2 pregnancies. The mean VAS of low back pain was 6.16. The mean disability due to low back pain was 40.3%.The mean of diastasis recti was 3 cm. the Mean± S.D, SEM OF VAS, ODI AND DRS have been tabulated in table 1.weak negative correlation was found between low back pain and diastasis recti score, which is illustrated in table 2 and Figure 1.1.there was also weak negative linear correlation between diastasis recti score and odi score, which is illustrated in table 3 and Figure 2.

Table 1: Illustrares Descriptive Statistics for Vas, Odi and Drs

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
ODI	30	40	46	41.70	.245	1.343
VAS	30	5.0	6.5	5.843	.0764	.4183
DRS	30	2.5	2.8	2.593	.0185	.1015

Table 2: Illustrates Corelation between Odi and Drs

Correlations			
		ODI	DRS
ODI	Pearson Correlation	1	-.142
	Sig. (2-tailed)		.455
	N	30	30
DRS	Pearson Correlation	-.142	1
	Sig. (2-tailed)	.455	
	N	30	30

Table 3: Illustrates Corelation between Drs and Vas

Correlations			
		DRS	VAS
DRS	Pearson Correlation	1	-.139
	Sig. (2-tailed)		.463
	N	30	30
VAS	Pearson Correlation	-.139	1
	Sig. (2-tailed)	.463	
	N	30	30

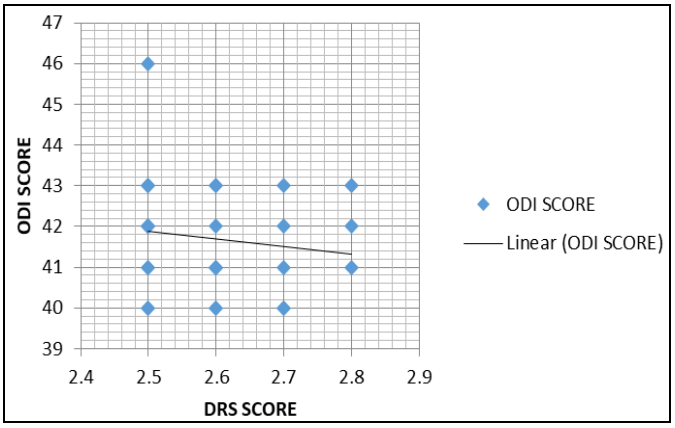

Fig 1: Shows Negative Linear Corelation between Odi and Drs

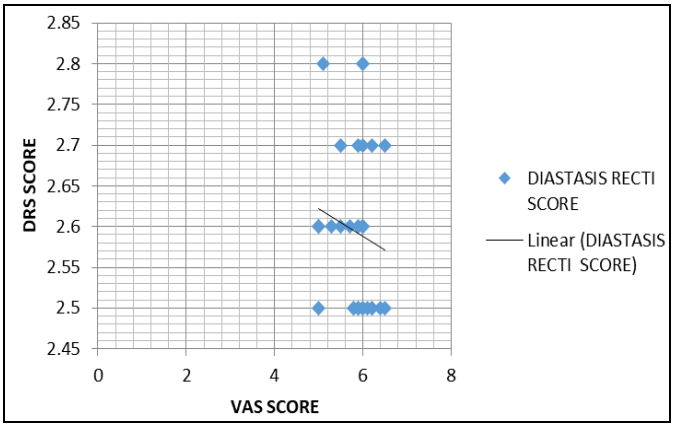

Fig 2: Shows Negative Linear Corelation between Drs and Vas

Discussion

The result of present study shows that there was a negative correlation between diastasis rectus abdominis and low back pain in multiparous women within the age group 35-45 years. Several authors have postulated a relationship between DRA and low back pain [9, 12], but the evidence for such an association is scant [7]. Our result showed no difference between women with and without DRA, and prevalence of low back and/or pelvic girdle pain. This is in accordance with Mota *et al*. and Parker *et al*. [7]. These studies support the present study in which there is a weak negative correlation between low back pain and diastasis recti. However, the latter study found an association between DRA and abdominal and pelvic region pain, and argued that the observation of no associations between DRA and low back pain might be due to inclusion of women with non-severe DRA. The present study also showed weak negative correlation between disability and diastasis recti. The reason for weak negative correlation may be that the diastasis is moderate that is it lies been 2 to 3.5 cm., so it may not have that significant effect on pain and disability of low back in multiparous women. Another reason for negative correlation was that the females were included 6 months to 2 years post partum, so there would have been a chance of bias.

Conclusion

The present study concludes that there was a weak negative linear correlation between low back pain and disability with diastasis recti in multiparous women of age group 35 to 45 years.

Limitation of the study

The sample size was small. only multiparous women were included in the study. No effect was seen on primiparous females. only a limited age group females were included in the study, so generalization cannot be done for all multiparous females. Another limitation of the present study was the lack of data on the normal width of line alba before pregnancy. Also only mild diastasis females were included, which added to the limitation of the study.

Future scope

Further study can be done by taking large sample size. Comparative study can be done on effect of diastasis recti during pregnancy and postpartum. Also research can be done including females with mild, moderate and severe diastasis recti, so that individual effect could be seen and also a comparison could also be done on their effect on low back pain and disability.

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