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Correlation of low back pain with core muscle strength in multigravida females of Madhya Pradesh, India

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Abstract
Aim: To study Correlation between low back pain and core muscle strength amongst the pregnant females.
Methodology: All subjects were explained about the purpose and the procedures of the study.
Result: Significant results were obtained. Conclusion: There is a significant correlation of core muscle strength and intensity of low back pain as well as significant correlation of core muscle strength and disability associated with the low back pain in 2nd trimester of pregnancy.

Keywords: pregnancy, VAS

Introduction

Pregnancy is the state of fertilization and devolvement for one or more offspring within a women uterus. The parental offspring (also called the conceptual) is referred to as an embryo or foetus. The term embryo is used primarily for developing humans up to eight weeks after fertilization (to the 10th week of gestation) after that the term foetus is used in pregnancy, there can be multiple gestation. As in the case of twins or triplets childbirth usually occur about 38 weeks after conception. In women who have a menstrual cycle length of four week. This is approximate 40 weeks from the start of this last normal menstrual period [1]. The changes of pregnancy are chiefly the direct result of four factors: the hormonally mediated changes in collagen and involuntary muscle the increased total blood volume with increased blood flow to uterus and the kidneys, the growth of the foetus resulting in consequent enlargement and displacement of the uterus, and finally the increase in body weight and adaptive changes in the centre of gravity and posture. The demands that these changes must make upon a woman should never be underestimated [2].

Normal pregnancies are accompanied by weight gain an increase in weight distribution in the breasts and abdomen. The location of woman's center of gravity (COG) changes because of the increase in weight and its distribution anteriorly [1]. With the increased weight and redistribution of body mass there are compensations to maintain balance. The pregnant woman usually walks with a wider base of support and increased external rotation at the hips [3].

Low Back Pain

According to the European guidelines for prevention of low back pain, low back pain is defined as "pain and discomfort", localized below the costal margin and above the inferior gluteal folds, with or without leg pain. The most common form of low back pain is the one that is called "non-specific low back pain", and is defined as "low back pain not attributed to recognizable [4].

Ostgaard & Anderson (1991) [5], in a retrospective review showed that back pain occur twice as often in women who had back pain before becoming pregnant, and occurs more in women who have been pregnant before.

These women also tend to have symptoms for longer Research indicates that in about 50% of those pregnant women experiencing pain, it is of sufficient intensity & duration to affect their lifestyle in some way, and for one-third of these individuals the pain is severe [6].

The first episode of pain in a pregnancy may occur at any stage, but for the majority it is between the 4th & 7th month that is in 2nd trimester. In general back pain seems to be felt at a lower level by a woman when she is pregnant than when she is not pregnant [7].

Procedure

The whole procedure of the study was properly explained to the subjects, the subjects were enrolled into the study after taking consents from them about participation in this study. General information was documented.

All the subjects were given the Visual Analogue Scale (VAS), meet the scientific criteria and it is suitable for the objective measurement of intensity of pain. The Roland-Morris Disability Questionnaire (self-informed) to fill, in their desired languages. All the subjects had to answer the questionnaire depending on their present status in terms of severity of pain and disability. Therefore to assess low back pain related disability in pregnant women we used Roland Morris Disability Questionnaire which is a validated scale that reflects limitations in different activities of daily living in subjects with low back pain. For Core Muscle Strength Evaluation All the subjects were asked to empty their bladder before the test. Subjects were positioned supine crook lying with hip flexed at 45 degrees. Subjects were given proper instructions about how to activate transverses abdominis muscle. The activation of transverses abdominis was confirmed with palpation. The inflatable cuff of the Diamond Dial Deluxe Blood Pressure Monitor was placed under the

hollow of the lumber spine (between L1 and S1). The cuff was inflated to the baseline pressure of 40mmHg [8].

The subjects were then asked to take a relaxed breath and while expiration to draw in the abdominal wall towards the spine so as to contract the deep abdominal muscles, raising the pressure up to palpation point shift up and recommence the breathing and hold up to 10 seconds. The Diamond Dial Deluxe Blood Pressure Monitor (as a Pressure Biofeedback Unit) used in the abdominal drawing in manoeuvre with palpation has been shown to be reliable method in measuring the transverse recruitment [8]. The test was repeated 3 times and the maximum pressure only was recorded. 3 minutes rest was given after each repetition.

Thus out of 25 females only 20 females are capable of doing the complete test till the end.

Result

Table 1: Participants Characteristics

Characteristics	Mean	S.D
Age(Years)	26.25	2.73
Week of Pregnancy	21.65	3.83
VAS Score	2.75	2.02
Roland-Morris Disability Score (%)	18.35	14.06
Core Muscle Strength (mm of Hg)	44.9	2.27

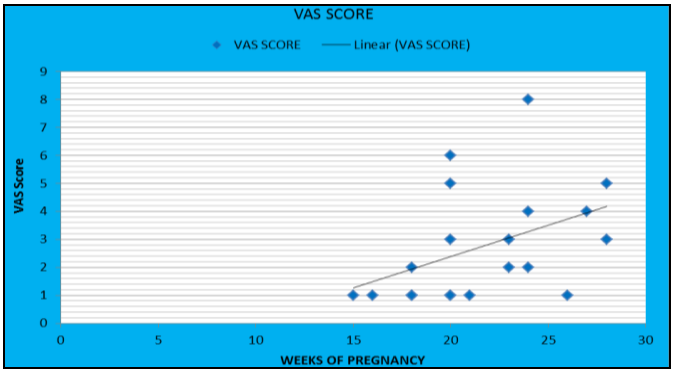

Fig 1: Correlation of weeks of pregnancy and VAS score

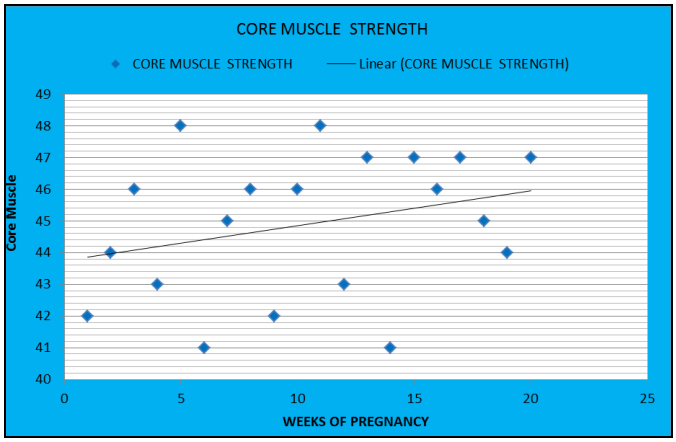

Fig 2: Correlation of weeks of pregnancy and core muscle strength

Table 2: Pearson coefficient correlations.

	Vas Score
Rmdq Score (%)	0.982

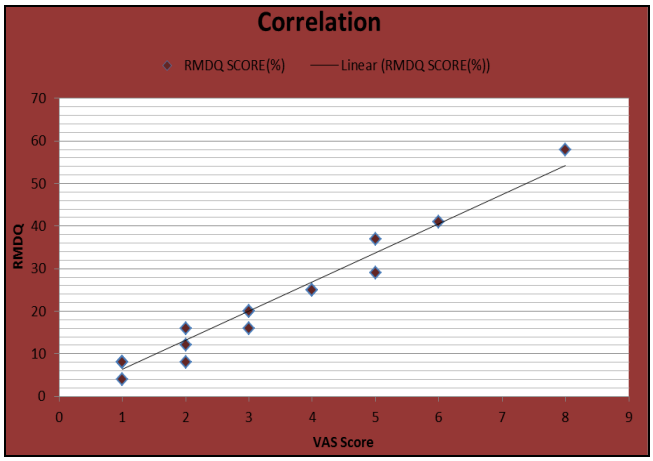

Fig 3: Correlation of VAS score and RMDQ score

Table 3: Pearson coefficient correlations.

	Vas Score
Core muscle strength	-0.843

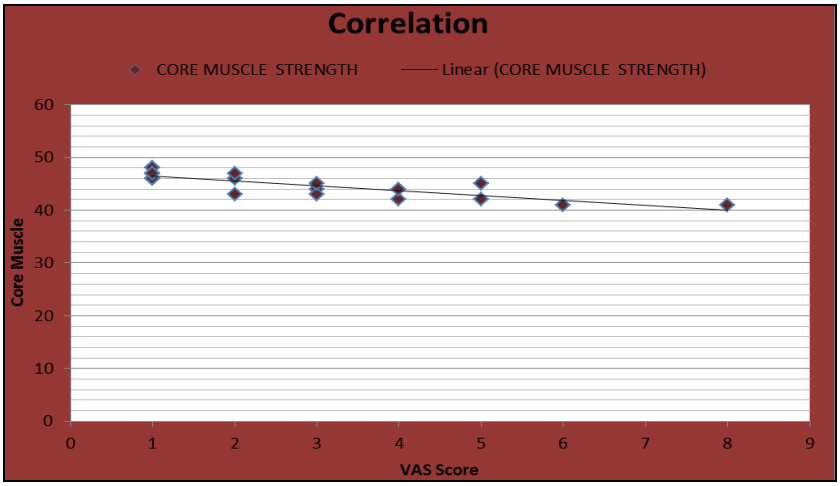

Fig 4: Correlation between VAS score and core muscle strength

Table 4: Pearson coefficient correlations:

	Rmdq Score (%)
Core Muscle Strength	-0.855

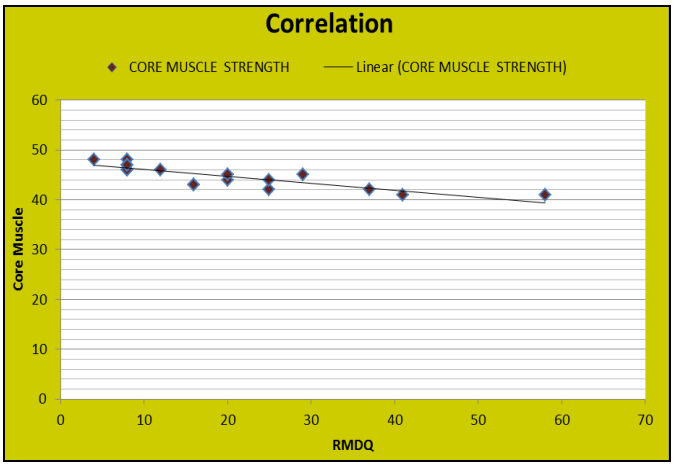

Fig 5: Correlation between RMDQ disability score and core muscle strength

Table 5

Descriptive Statistics	AGE(years)
Mean	26.25
SD	2.73
Median	27
Maximum	30
Minimum	22

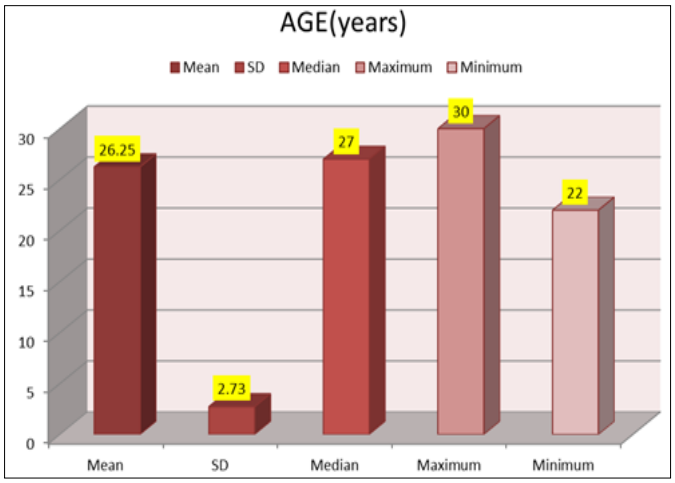

Fig 6: Mean and SD graph of age (years)

The graph shows the mean,median, standard deviation, minimum and maximum values of age (years) of the participants in the study. On x axis there is age ranges to 30-0 and on y axis the descriptive statistics.

Table 6

Descriptive Statistics	Weeks Of Pregnancy
Mean	21.65
SD	3.83
Median	20.5
Maximum	28
Minimum	15

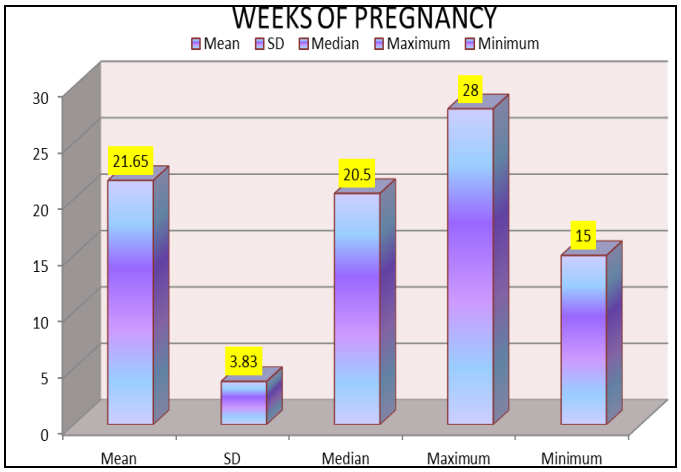

Fig 7: Mean and SD graph of weeks of pregnancy

Table 7

Descriptive Statistics	Vas Score
Mean	2.75
SD	2.02
Median	2
Maximum	8
Minimum	1

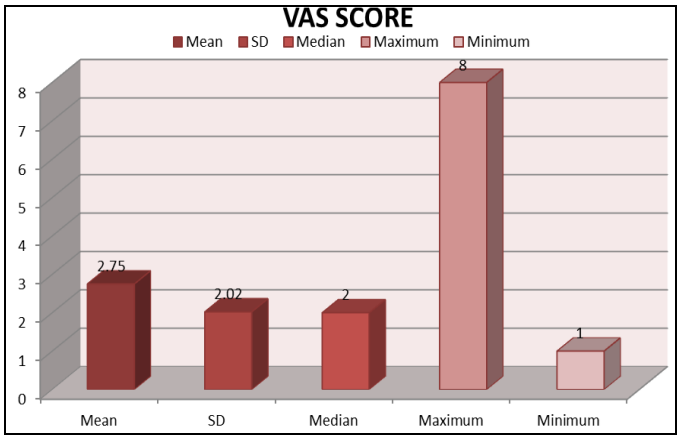

Fig 8: Mean and SD graph of VAS score

Table 8

Descriptive Statistics	RMDQ Score (%)
Mean	18.35
SD	14.06
Median	14
Maximum	58
Minimum	4

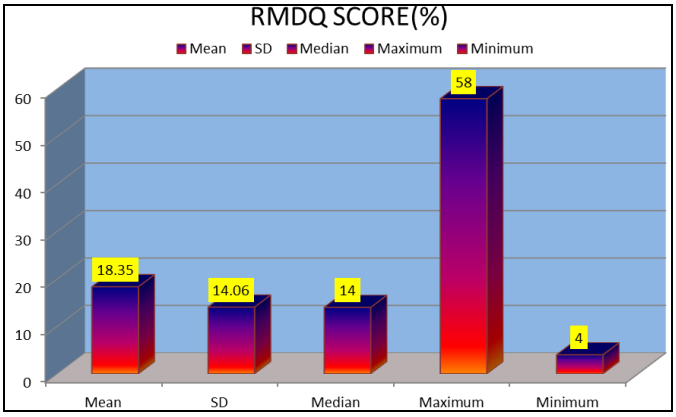

Fig 9: Mean and SD graph of RMDQ score (%)

Table 9

Descriptive Statistics	Core Muscle Strength
Mean	44.9
SD	2.27
Median	45.5
Maximum	48
Minimum	41

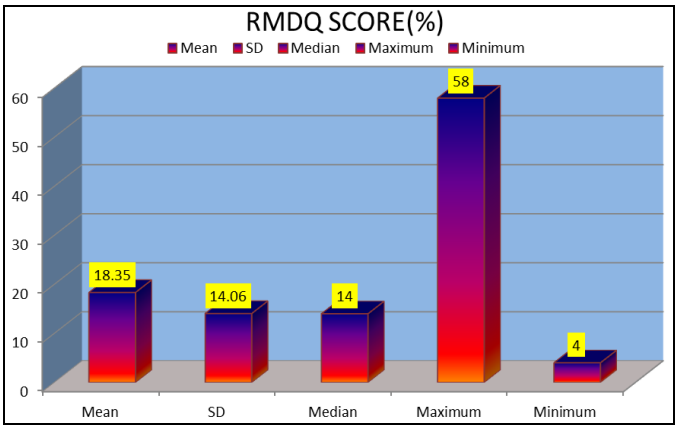

Fig 10: Mean and SD graph of core muscle strength

Discussion

The main objective of this study was to analyse the core muscle strength of multigravida pregnant women in their 2nd trimester stage. And to find the correlation of positive low back pain with core muscle strength in multigravida pregnant women in their 2nd trimester, The results of this study on the correlation between core muscle strength and intensity of low back pain in 2nd trimester of pregnancy in multiparous and correlation between core muscle strength and disability related to low back pain in 2nd trimester of pregnancy in multiparous, showed a significant correlation. Pregnancy, as an important event in life of a woman, causes major changes in woman physically and biomechanically. However studies on the biomechanically aspect of the changes are lesser those on the physical aspect of changes. There is a reduction in core muscle strength in normal individuals with low back pain but there is no evidence to state whether this is true in case of pregnancy related low back pain. Pregnant women have difficulty in ADL that are essential because of low back pain. Thus the questionnaire might be suitable to assess the effect of low back pain on the quality of life.

According to Unsgaard-tondel, *et al*. Some studies have suggested that recryitment of the deepest abdominal muscle, transversus abdominis, is crucial in the development and improvement of low back pain and lmbo-pelvic pain, thus specific stabilizing exercises activating deep local muscles in coordination with global muscles are recommended in the treatment of pregnancy-related low back pain and lombo-pelvic pain. According to Sencan S, *et al*. conduct a survey asked to complete a survey questionnaire. The prevalence of PRLBP was 53.9 % mostly in the third trimester were more disabled than those in the first and second trimesters, concluded that about 1 in 2 women have PRLBP in any stage of pregnancy.

Some studies shows most pregnant women experience back pain during pregnancy, a serious issue that negatively impacts life quality during pregnancy. They evaluate how a stability ball exercise influence low back pain and daily life interference across the second and third pregnancy trimester.

Conclusion

The objective of this study was to analyse the core muscle strength of multigravida women in their 2nd trimester stage and to analyse the correlation of low back pain with core muscle strength in multigravida pregnant women in their 2nd trimester.

There is a significant correlation of core muscle strength and intensity of low back pain as well as significant correlation of core muscle strength and disability associated with the low back pain in 2nd trimester of pregnancy.

Thus we can say that core muscle strength is an important factor for modulation of pain as well as for controlling its other associated disabilities. Thus this may support the importance of ante-natal exercises which includes core strengthening, to alleviate back pain and disability related to it during pregnancy.

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