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Effectiveness of kinesiotaping on pregnancy related low back pain – a randomized controlled trial

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ABSTRACT

Background

Kinesio Taping is not used as an isolated physiotherapeutic intervention but as an adjunctive treatment to conventional physiotherapy in order reduce pain and disability in patients with low back pain.

Aim

To determine effectiveness of Kinesio Taping along with conventional physiotherapy in patients with pregnancy related low back pain.

Methodology

An experimental randomized control study was performed on 40 pregnant women with low back pain. Twenty subjects in the control group were given pelvic tilting exercises and twenty subjects in the experimental group were given Kinesio taping along with pelvic tilting exercises for 5 days. Numeric Rating Scale (NRS) for pain and Roland-Morris Disability Questionnaire **(**RMDQ) for functional disability were recorded pre and post intervention.

Results

There was highly significant reduction in pain on NRS ($P<0.001$) and highly significant improvement in RMDQ score ($P <0.001$) in the experimental group as compared to control group.

Conclusion

The study concludes that kinesio taping can be used as an adjunctive treatment to achieve effective pain control in pregnancy related low back pain.

Keywords: Kinesio taping, Low back pain, Pelvic tilting exercises, Pregnancy.

INTRODUCTION

Low back pain is very common complaint during pregnancy [1] which can have a negative impact on their quality of life. [2, 3] The prevalence of pregnancy related low back pain ranges from 20% to 80% worldwide. [3, 4, 5, 7] Majority of women are affected in their first pregnancy. [4, 7]

The main reason for pregnancy related low back pain is due to the change in the ligament laxity and posture. A hormone relaxin, causes ligamentous laxity and discomfort to the Sacro-iliac joint and to

the entire back which causes instability of the pelvis and misalignment of the spine. [6] Pregnancy shifts the centre of gravity as a result of which the body adjusts the posture accordingly which results in back pain or strain. [7] Low back pain can either be a pelvic girdle pain or lumbar pain which appears as pain over and around the lumbar spine. [7]

Kinesiotape is a drug free elastic tape used for treating various musculoskeletal problems. [6, 8] The kinesiotaping reduces acute or chronic muscle spasm, oedema and pain. [9, 10, 12] Kinesiotaping has multiple functions such as immobilises the fascia, helps in lifting the skin by activating blood and lymph flow, reduces the nociceptive stimuli by deactivating pain, improves the fascia function and position, supports the injured joints and muscles and increases the proprioceptive signals which helps in regulation of the tone of muscles, thus ensuring stability. [10, 11]

Although Kinesio Taping has been used extensively in clinical practice but it is not used by physiotherapists as an isolated form of intervention. [6, 13, 14] Therefore, questions remain about the effectiveness of the Kinesio Taping method as an adjunctive treatment to conventional physiotherapy.

MATERIALS AND METHODOLOGY

A short term, prospective, randomized controlled study was performed on pregnant women having low back pain at obstetrics outpatient clinic of Bhausaheb Sardesai Talegaon Rural Hospital, Talegaon Dabhade.

Selection of subjects

Written informed consent was obtained from all the subjects prior to their participation in the study. All the participants were randomly assigned to two treatment groups (Group A and Group B) equally by computer generated randomization.

Selection criteria

Inclusion criteria for the study were maternal age between 20 to 35 years, only primigravida, gestational age between 28 and 36 weeks, Low back pain experienced anywhere from T12 to the gluteal fold without leg pain, at least moderate pain intensity scoring ≥ 4 on NRS

Exclusion criteria were hypersensitive skin, history of allergies to acrylic copolymer, skin lesions to lumbosacral area, low back pain prior to pregnancy, twin pregnancy or fetal anomaly; scoliosis, intervertebral disc pathology and any uncontrolled medical condition.

PROCEDURE

In both groups, the low back pain severity was measured on NRS and the RMDQ score was used for evaluation of functional disability. The NRS (at rest and on activity) and RMDQ scores were evaluated at baseline and day 5 of interventions. RMDQ score was calculated in % for example, if a patient's baseline score was 8 and at the end of treatment her score was 2 (6 points of improvement). We would calculate (6/10×100) i.e. 60% improvement.

Group A

Group A (experimental group) received regular pelvic tilting exercises along with Kinesio taping for 5 days. NRS and RMDQ scores were recorded at baseline and Kinesiotaping was applied on the low back region. Pelvic tilting exercises in supine and quadripod positions were performed by the patients with 10 seconds hold for 10 repetitions. All the exercises were performed 3 times a day for 5 days. Kinesiotape was removed on the 5th day and NRS and RMDQ scores were assessed post treatment.

Group B

Group B (control group) received only pelvic tilting exercises in supine and quadruped positions for 5 days.

Figure1: Application of Kinesio taping for low back pain.

DATA ANALYSIS AND INTERPRETATION

Table 1: Comparison of Post intervention pain intensity and functional disability.

Scales	Experimental	Control	P Value
Post NRS (On Activity)	2.85 ± 0.82	3.95 ± 0.82	< 0.001**
Post NRS (At Rest)	0.1 ± 0.31	1.05 ± 0.68	< 0.001**
RMDQ improvement (%)	76.1 ± 10.05	30.35 ± 6.37	< 0.001**

** Extremely significant P< 0.001 by using unpaired t-test

Table 2: Comparison of intensity of pain on NRS (On Activity)

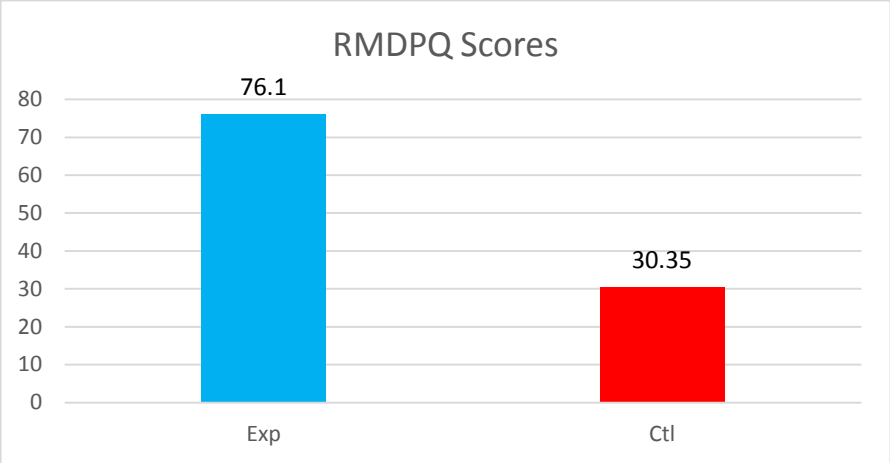
	EXPERIMENTAL	CONTROL
Pre NRS	7.1 ± 1.25	6.8 ± 1.28
Post NRS	2.85 ± 0.81	6.5 ± 1.10
P value	< 0.001**	0.012

** Extremely significant P< 0.001 by using paired t-test

Table 3: Comparison of intensity of pain on NRS (At Rest)

	EXPERIMENTAL	CONTROL
Pre NRS	2.3 ± 0.80	4.5 ± 0.99
Post NRS	0.1 ± 0.31	4.4 ± 0.99
P value	< 0.001**	0.419

** Extremely significant P< 0.001 by using paired t-test



Graph 1: Comparison of mean of Roland Morris Pain Disability Questionnaire (RMDQ) scores of Experimental and Control group.

RESULTS

All the baseline characteristics of participants were matched and there were no significant differences between the groups with regards to participant age, gestation week, BMI, pain severity and RMDQ scores (for all P>0.10).

In both groups, pain intensity on NRS (at rest and on activity) and RMDQ scores were significantly reduced on day 5 compared with baseline (for all P<0.001) (Table 1).

When compared pre and post scores of the intensity of pain on NRS (at rest and on activity) within the groups, it was highly significantly reduced in experimental group than control group (P<0.001) (Table 2 & 3).

DISCUSSION

The results of our study showed extremely significant reduction of pain on NRS at rest and on activity in experimental group. Similar results were found by Natalia Kuciel et al in their study of Kinesio taping on pregnant women suffering from pelvic girdle pain. They showed significant pain reduction on 3rd day after the tape was applied and on 5th day after the tape removal. [14] Another study by Kelle B et al showed effect of kinesio taping on reduction of pain on 6th day as compared to control group. [15]

The reduction in pain due to Kinesio taping may be related to physiological mechanism by which kinesio taping presumed to have therapeutic benefit: 1) gathered fascia to align the tissue in its desired position, 2) lift the skin over areas of inflammation, pain and oedema, 3)increase stimulation of the mechanoreceptors to either stimulate or limit movement, 4) provide a positional stimulus to the skin and 5) decrease pressure over the lymphatic channels that provide a path for the removal of exudates. [8, 11] These physiological mechanisms remain theoretical because there is limited research to support these concepts.

The results obtained in this study are noteworthy, within the group comparison showed that there was highly significant improvement in RMDQ scores (76%) in experimental group as compared to control group (48%) which was found significant post intervention. Similar results were found by Kaplan S et al study on Kinesio taping in women with pregnancy related low back pain. They found that pain intensity and RMDQ scores improved significantly in both in 5 days compared to control group. [16] Similarly Castro-Sanchez AM et al studied effect of kinesio taping and sham taping on non-specific low back pain and found that at 1 week the experimental group had significantly greater improvement in disability on RMDQ and Oswestry Disability Index. However they were not significant 4 weeks later. [9]

Limitation of the present study was that, a sham taping application was not used in control group; therefore, the placebo effect of the procedure cannot be ignored. Another limitation of our study was that it studied only short-term effects, so future study can be done to assess the long-term effects of Kinesio taping.

CONCLUSION

Combined Kinesio taping and pelvic tilting exercises seem to be more effective than pelvic tilting exercises alone. Thus, we conclude that Kinesio taping can be used as an adjunctive treatment method to achieve effective control of pregnancy related low back pain.

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