

The Effectiveness of Kinesio-Taping and Muscle Energy Technique Among Postpartum Females with Sacro-iliac Joint Dysfunction

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ABSTRACT

Objective: Our study aimed to compare the effects of Kinesio-Taping and Muscle Energy Technique in managing pain, disability, and pelvic inclination among postpartum females with sacroiliac joint dysfunction.

Study Design: A single-blinded randomized controlled trial study

Place and Duration of Study: This study was conducted at the outpatient department of Physical therapy in a tertiary care hospital in Karachi, Pakistan, from May 2022 to Aug 2022.

Materials and Methods: Fifty-two postpartum females with sacroiliac joint dysfunction aged between 20-35 years, randomly divided into groups A and B (n=26 in each group), were examined for the intensity of pain, physical disability, and pelvic asymmetry. The outcomes were assessed pre and post of four weeks of treatment; performed twelve sessions of Kinesio-taping for group A and MET for group B.

Results: Kinesio-taping and MET showed a significant difference in pre and post readings with the p-value <0.05 in all outcome measures of pain, disability, and pelvic asymmetry. The post-mean differences between the groups demonstrated no significant difference (p>0.05).

Conclusion: MET and K-taping both were practical management approaches for reducing pain and physical disability and decreasing pelvic asymmetry among postpartum females with sacroiliac dysfunction.

Key Words: Pain, disability, physical therapy, pelvis

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INTRODUCTION

Low back pain during pregnancy is the most common musculoskeletal condition that has been reported in among 20% to 90% of the female population^{1,2}. Approximately 59% of the female reported suffering from pain after giving birth to a child during the postpartum period causing severe disability that negatively impacted daily activities, capacity to participate in work, and health-related quality of life³. The most common reason for low back pain during the postpartum period is the biomechanical change that has occurred during the pregnancy.

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The biomechanical changes that have impacted the Sacroiliac joint (SIJ) are prevalent among 13 to 30% of the cases with low back pain⁴⁻⁶.

Multiple management strategies ranging from anti-inflammatory drugs to physical therapy-based management strategies are available for relieving pain and ultimately plummeting disability⁷⁻⁸. However, anti-inflammatory medicines may impact child health as these drugs are mixed into the mother's bloodstream and then transferred into the child during breast feeding⁵. Several non-invasive methods, including; mobilization, strengthening exercises, stretching of muscles, and conventional pain management modalities like therapeutic ultrasound and Transcutaneous Electrical Nerve Stimulation, may be applied⁹⁻¹¹.

K-taping is an advanced non-invasive method that has recently been gaining importance as an effective management strategy in relieving musculoskeletal pain and disability¹². The techniques aim to increase circulation, reduce pain and inflammation, increase neuromuscular re-education, prevent injury, and accelerate recovery¹³. On the other hand, Muscle Energy Technique is another physical therapy-based management strategy performed in treating spine and SIJD and for their realignment. The technique is based on the principle of manual therapy involving the

performance of voluntary isometric contraction of affected muscles with up to 70% of intensity countered by a physical therapist. The technique has been reported in multiple studies to have beneficial results in reducing disability and pain among patients with SIJD¹⁴⁻¹⁵. Hence, this study aims to compare the effects of K-taping and MET in managing pain, disability, and pelvic inclination ensued due to biomechanical changes among postpartum females.

MATERIALS AND METHODS

A single-blinded randomized clinical trial was conducted on 52 participants at the outpatient physical therapy department in a tertiary care hospital in Karachi, Pakistan. The data was collected from May 2022 to Aug 2022. The targeted population was postpartum females aged 20-35 with anterior innominate sacroiliac joint dysfunction. Participants were randomly divided into groups, i.e., Group A (n=26) and B (n=26), through simple random sampling. The intervention was given for four weeks; Group A was given Kinesio-Taping over the sacroiliac joint, whereas Muscle Energy Technique to Group B. Additionally, hot pack was given for 10 minutes to both groups. The outcome measure includes the intensity of pain using NRPS, the Physical disability using RMDQ, and pelvic symmetry via PALM Pelvic inclinometer. The measurements were taken at the start of the study and end of 4 weeks. In total 12 sessions were given to both groups; each session was comprised of 20 minutes, three times a week. Written informed consent was taken from participants before enrollment in the study. The study was approved by the institutional Ethical Review Committee (Reference No: 5490522SREH),

Inclusion Criteria: Postpartum females with sacroiliac joint dysfunction having anterior innominate, an aged group in between 20-35 years

Exclusion Criteria: Those with a history of any lower limb fracture in the past 6 months, spinal stenosis, spondylolisthesis, and conditions like diastasis recti, pelvic prolapse organ were excluded.

Group A:

Certified Kinesio taping practitioner (CKTP) applied KT on the hip region of patients and was instructed to keep the tape on for 48 hours following a test trial of a small patch for 24 hours. For the KT application, patients were asked to stand straight, keeping their feet at shoulder level comfortably. With instructions to flex the lumbar spine, a 5 cm wide long I-shaped piece of Kinesio tape was applied with 80% tension transverse to the patient's painful area and the bilateral SIJ region, with no tension applied to the ends of the tape. Another short piece of Kinesio tape was applied with 80% tension at an angle from the painful point to the hip, and

no tension was applied to the ends of the tape. An identical application was performed on the other side of the sacroiliac region.

Group B: MET was applied to the erector spinal muscle using the active assisted technique for 10 minutes. The patient was asked to sit comfortably on the couch. The therapist stood behind the patient and performed flexion, rotation, and side bending of the trunk. When the patient reached the tolerated limit of flexion, the therapist asked him to perform extension, side bending, and rotation to the opposite side while holding his breath for 7–10 seconds and rest for 2-3 seconds; then, the patient was asked to release the breath. A total of 10 repetitions were performed.

Statistical Analysis: Data were analyzed by SPSS version 20. Mean and standard deviation was calculated for numerical data. Pre and post-reading were analyzed using Paired-t-test, whereas the group analysis was done using an Independent t-test. P-value ≤ 0.05 was considered significant.

RESULTS

The clinical characteristics of participants, including age, weight, height, and BMI for both group A and B, are described in table 1.

Table No. 1: Clinical characteristics of participants

Variables	Group A (KT)		Group B (MET)	
	Mean	SD	Mean	SD
Age (years)	27.84	4.37	27.04	4.48
Weight (kg)	59.72	3.25	59.96	3.51
Height (m ²)	2.38	0.06	2.39	0.06
BMI (kg/m ²)	25.15	1.49	25.11	1.54

The pre-post mean readings of pelvic asymmetry, pain, and physical disability in both groups were analyzed through paired sample t-tests. The data revealed that both interventions significantly reduced pelvic asymmetry, pain, and physical disability. Four weeks of the therapeutic program significantly reduced the variables ($p < 0.05$) with a mean difference of -3.85 ± 1.30 , -4.50 ± 0.58 , and -6.8 ± 0.88 for pelvic asymmetry, pain, and physical disability, respectively in KT group whereas mean difference of -2.98 ± 0.86 , -3.79 ± 0.21 , and -6.66 ± 0.88 was observed in MT group for pelvic asymmetry, pain, and physical disability respectively, described in Table 2.

Between the group analysis of groups A and B, groups were compared using an independent t-test. The post-mean differences demonstrated no significant mean difference with the p-value > 0.05 . The details are depicted in Table 3.

Table No. 2: Pre and post readings of Group A and B

Variables		n	Pre Mean± SD	Post Mean± SD	Mean Difference ± SD	95% CI	P-value (<0.05)
Group A (Kinesio-taping)	Pelvic Asymmetry	26	14.47±1.17	10.62±1.37	-3.85 ± 1.30	-4.40 to -3.30	<0.001
	Pain		7.83±0.70	3.33±0.63	-4.50±0.58	-4.74 to -4.25	<0.001
	Physical disability		16.08±1.90	9.26±1.73	-6.8±0.88	-7.20 to -6.44	<0.001
Group B (Muscle Energy Technique)	Pelvic Asymmetry	26	14.26±1.00	11.27±1.09	-2.98±0.86	-3.35 to -2.61	0.001
	Pain		7.45±0.93	3.66±0.63	-3.79±0.21	-4.18 to -3.390	0.001
	Physical disability		16.87±2.36	10.20±1.79	-6.66±0.88	-7.73 to -5.59	0.0001

Table No. 3: Between the group analysis of Variables

Variables	n	Post Mean± SD (Group A)	Post Mean± SD (Group B)	Mean Difference ± SD	95% CI	P-value (<0.05)
Pelvic Asymmetry	52	10.65± 1.37	11.27± 1.09	0.65±1.24	0.06 to 1.37	0.074
Pain		3.33± 0.63	3.66± 0.63	0.33±0.63	-0.03 to 0.70	0.076
Physical disability		9.29±1.70	10.20±1.79	0.91±1.75	0.10 to 1.93	0.076

DISCUSSION

The results of our study revealed that both muscle energy techniques (MET) and Kinesio-taping (KT) were effective in intra-group analysis in managing pain, disability, and pelvic asymmetry after four weeks of intervention given to postpartum females. The inter-group analysis suggested no significant difference between the two techniques. Hence, implying that both techniques were equally effective in managing pelvic asymmetry, pain, and physical disability. Thereby, it can be used interchangeably as a physical therapy-based management approach for the condition associated with SIJD among postpartum females.

A study conducted in the year 2019 revealed that in the management of anterior innominate iliosacral dysfunction, MET was found to be effective in managing pain and disability. Besides that, the same study also revealed that the effects of MET were significantly better than the Mulligan technique. The study involved a total number of n=30 participants divided into two groups, n=15 in each group, and six sessions of intervention were given¹⁶. Similarly, in another study, the effects of k-taping were determined in women after full-term delivery on pain and disability. It was observed that k-taping was found to be significantly effective in plummeting despair and disability¹³. Furthermore, a study determined the effects of MET on pelvic girdle pain among pregnant women compared to other pain management approaches, it was

observed that no significant mean difference between the group was observed, possibly because the women were during the period of pregnancy and only a single session of physical therapy was administered to the patients¹⁷.

Moreover, the study has provided evidence that both MET and k-taping had an effective result in managing pain and disability. In a systematic review, the author qualitatively analyzed 21 studies in which the effects of MET were determined on chronic nonspecific pain, and it was concluded that the pain management had been effectively achieved; however author suggested incorporating MET with a conventional approach for better results¹⁸. Another study to determine the effects of Kinesio taping on lumbopelvic pain of pregnant women, it was found that KT when combined with mobilization exercises and paracetamol was found to be significantly p<0.001, effective in plummeting the level of disability and pain as compared to mobilization exercise and paracetamol, when administered to patients alone thereby providing evidence that k-taping was an effective adjunct management approach for pain and disability¹⁹. One of the studies said Mulligan mobilization was found to be more successful than the Muscle Energy Technique in treating patients with SIJD²⁰.

CONCLUSION

The findings of our study revealed that MET and k-taping are effective management approaches for

reducing pain and physical disability and decreasing pelvic asymmetry among postpartum females. However, we believed that for a better understanding of the findings, research with greater effect size should be performed, and subjects with other musculoskeletal problems must be included for more generalized findings.

Author's Contribution:

Concept & Design of Study: Sabrina
 Drafting: Sumaria Imran Farooqui, Muhammad Abid Khan
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 Revisiting Critically: Sabrina, Sumaira Imran Farooqui
 Final Approval of version: Sabrina

Conflict of Interest: The study has no conflict of interest to declare by any author.

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