Effect of stabilizing exercises and acupuncture on postpartum sacroiliac pain in Egyptian females: a randomized control trial

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ABSTRACT

Background: Postpartum Sacroiliac joint pain, a serious problem for the mother and is reflected by the inability to perform daily activities and reduce health-related quality of life. **Objective:** To estimate the effect of stabilizing exercises and acupuncture on postpartum sacroiliac pain. **Patients and methods:** Forty multiparous women with sacroiliac joint pain (SIJP), were included. They're aged between 25-35 years, body mass index (BMI) from 25-30kg/ m^2, parity less than three times, and delivered normally, they're assigned into two equal groups. Group (A) performed stabilizing exercises for lumbo-pelvic muscles and acupuncture. Group (B) received only acupuncture, were performed three times per week for two months. The assessment was carried before and after the treatment throughout the present pain intensity (PPi) and the Oswestery disability questionnaire. **Results:** It revealed a significant decrease in the PPi scores (P<0.001) and a significant improvement in functional disability (p<0.001) in both groups. While, group (A) showed a significant decrease in the PPi scores and significant improvement in functional disability with percentage of improvement was 75%% & 62.5% respectively more than the group (B). **Conclusion:** These results indicate that the lumbo- pelvic stabilizing exercises in conjunction with acupuncture were effective adjunct methods in alleviating postpartum sacroiliac joint pain.

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Background
Methods
Result
Conclusion
With minimum 250 words

Key words: Postpartum; sacroiliac pain; stabilizing exercise; Acupuncture.

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1- INTRODUCTION

SIJP is defined as pain arising from intra-articular structures such as the anterior sacroiliac ligament, posterior sacroiliac ligament, interosseous ligaments, and articular cartilage in the SIJ [1]. It incorporates torment emerging from extra-articular structures that surround the SIJs such as the sacrotuberous, sacrospinous, and/or iliolumbar ligaments [2]. The prevalence of sacroiliac joint pain has been reported between 13-30%. [3- 4]. Sacroiliac joint pain (SIJP) is a frequent complaint of pregnancy and the postpartum period, with about one in every five women experiencing a degree of pelvic discomfort. A proportion of these will have rigorous

pain that may persist well into the postpartum period [4]. Effective management to relieve pain and prevent a chronic status. This becomes an issue of importance for all concerned with the ladies' wellbeing [5].

During pregnancy, relaxin has a diverse range of effects, including the generation and rebuilding of collagen, thus incrementing the elasticity of muscles, tendons, ligaments and tissues of the birth canal in view of deliver**y.** Muscle Strain during the actual birth can happen as the lower back muscles are utilized, alongside the pelvic muscles, during a vaginal delivery so this pushing strain the muscles and ligaments in the lumbar area of the back [6-7].

Specific stabilizing exercise program in women with postpartum pelvic pain, improved functional status and reduced pain [5].

The stabilizing sequence incorporates strengthening of the segmental muscles, neutral spine stabilization and conclusively reinforcing the prime movers. Initial stabilization exercises are directed to these muscles, which can control individual segmental mobility. The next phase is the stability training; it includes direct and indirect reinforcing of muscle groups in neutral spine posture. Training starts with exercises intended to find the neutral spine in different body positions as prone lying, sitting and jumping, which improves the awareness of lumbar and pelvic motion. This is followed by exercises of extremities while keeping up a neutral spine and later with the integration of resistance to the extremities, either manually or with weights. These exercises are performed slowly with the accentuation on exact pelvic control. This will encourage neuromuscular coordination, improve endurance, strength. Furthermore underlines the smaller postural stabilizer [8].

Finally, strengthening the prime movers. Strengthening of the larger and more superficial muscles of the trunk. These muscles are not only involved in moving the spine, but are also responsible for transferring load directly between the thoracic cage and the pelvis. The main function of the global muscles is to balance the external loads applied to the trunk so that the residual forces transferred to the lumbar spine can be handled by the local muscles [9].

The stabilization exercises were created to address the following goals: to focus training on particular muscles that are important for increasing stability, to represent the full range of potential levels of difficulty and to provide a clear increase in difficulty based on increasing moment to the muscles stabilizing the lumbar spine. Lumber stabilization exercise should focus on the transverses abdominis and multifidus, because these muscles are the primary stabilizers of the spine [10].

Acupuncture is a collection of procedures, including penetration of the skin with needles so as to stimulate certain points on the body. Particular anatomic parts of the body are stimulated for therapeutic purposes. This should be possible in the typical path with needles, yet professionals might, likewise, utilize heat, pressure, impulse of magnetic energy, burning by a preparation of the herb (Artemia vulgaris), and electrical stimulation [11]. Acupuncture may produce effects through many different mechanisms, as acupuncture points have electrical properties that, when stimulated may adjust the level of chemical neurotransmitters in the body, as endorphins are discharged because of actuation of the hypothalamus. The impacts of acupuncture have additionally been ascribed to modifications in the regular electrical streams or electromagnetic fields in the body [12].

Acupuncture is said to restore the imbalance of energy and emotions due to sickness, overwork, stress, diet or injuries. The stimulation of acupuncture points on the body can discharge certain hormones and chemicals that can decrease pain, control the endocrine system, and calm the nervous system. Acupuncture controls serotonin in the brain, with improves of muscle spasms and increased T-cell count, which stimulates the immune system. It additionally animates nerves, which transmit impulses to the hypothalamic-pituitary system at the base of the brain [13].

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2. PATIENTS AND METHODS

2.1. PATIENTS

A randomized controlled trial design was used for the current study. This study was carried out on forty volunteers multiparous postpartum women with SIJP had been referred by a doctor. They were selected from Outpatient Clinic of Kasr El Ainy University Hospital, Faculty of Medicine, Cairo University. Their ages ranged between (20-35) years and BMI ranged between (25-30) kg/ m^2 and the number of parity from (1 to 3) times, were house wives with a medium level of education and after normal vaginal delivery using local anesthesia. All patients were referred from orthopedist after examination within 6 to16 weeks since last delivery. A detailed medical and gynecological history was taken from each patient, including the number of deliveries from (1 to 3) time), age, weight and history of neurological disorder. Subjects were randomized to group (A) or (B) by using the envelope method. "Lumbo-Pelvic Stabilizing Exercises (LPSE) and acupuncture" or " acupuncture only" written on it, was given to a staff physical therapist unrelated to the study; she/he picked one envelope after subjects agreed to take part in the study and sign a written approval consent form before the study. Group (A): received lumbo-pelvic stabilizing exercises in

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addition to acupuncture and Group (B) received only acupuncture. Both groups received same acupuncture as well as continued their ordinary daily living activities.

All subjects were instructed not to receive any drugs during the duration of the study. All subjects were not participating in any pervious training program. Patients with other pain conditions (e.g. Cancer pain, neurological irritative conditions of the pelvis), patients with system disorders such as cardiovascular disorders and patients with contraindications to treatment (e.g., hemophilia, advanced liver disease, psychosis) were excluded from the study.

2.2. METHODS

Interventions:

Exercise procedures: group (A) performed lumbo-pelvic stabilizing exercises three times per week for two successive months**.** The basic written regimen could be integrated at home and work.

Lumbo- pelvic stabilizing exercises, training program will be applied to all patients in the group (A): It was based on specific training of the transversely oriented abdominal muscles with coactivation of the lumbar multifidus at the lumbosacral region [14], training of the gluteus maximus, the latissimus dorsi, the oblique abdominal muscles [15], the erector spinae, the quadratus lumborum, and the hip adductors and abductors. Initially, the focus was on specific contraction of the transversely oriented abdominal muscles, consisted of the posterior pelvic tilting exercise, bridging exercise, bilateral hip abduction, bilateral hip adduction, bilateral knee raise, hip shrugging and bilateral heel hovers.

The exercises were done with the patient lying on the side, four points kneeling, sitting, and standing. The exercises should not provoke pain, and the subjects were encouraged to activate the transversely oriented abdominal muscles regularly during daily activities. They did two sets of exercise between 10-15 times (10 times in the first 12 sessions after that they were 15 times, at others 12 sessions) for each exercise with a 30-second to one minute rest between each set. Duration of each home program session lasted for 10 minutes twice a day. Each session lasted for 45 minutes.

1) Posterior pelvic tilting: from the crock lying position, the subject instructed to contract glutei, abdominal muscles, press, lumber region down against the plinth, hold, then relax. Sustained muscle contraction maintained for 5 seconds, followed by 10 seconds of relaxation and repeated 10 times/session [16].

2) Bridging exercise: From the crock lying position with arms beside the body and palms facing the plinth, then the participant was asked to raise her pelvis up from the plinth, hold

for 5 seconds then, return to starting position and relax for 10 seconds. This exercise was repeated 5 times each session [17].

3- Bilateral hip abduction (adduction): From the crock lying position, the participant was asked to abduct (adduct) her lower limbs against the therapist hand, hold for 5 seconds then, relax for 10 seconds. This exercise was repeated 5 times each session**.** This exercise could be performed in other positions such as side lying position with a pillow between legs [18].

4- Bilateral knee raise exercise: From the supine lying position, the participant was asked to raise her lower limbs against the therapist hand, hold for 5 seconds then, relax for 10 seconds. This exercise was repeated 5 times each session [17].

5- Hip shrugging exercise: From the half crock lying position, the subject instructed to contract abdominal muscles, draw the straight leg up towards the ribs to seem shorter then push down to seem longer, then relax and return to starting position [19].

All exercises were carefully instructed individually, and supervised at each visit, but performed at home-exercises on a daily basis. To exercise in short sessions on several occasions during the day.

Acupuncture technique: It was performed for all subjects in both groups (A&B) three times per week for 2 successive months (24sessions).

Acupuncture needles: Acupuncture needles are typically made of stainless steel wire. They are usually disposable, but reusable needles are sometimes used as well, though they must be sterilized between uses. Needles vary in length between 13 to 130 millimeters (0.51 to 5.1 in), with shorter needles used near the face and eyes, and long needles in more fleshy areas; needle diameters vary from 0.16 mm (0.006 in) to 0.46 mm (0.018 in), with thicker needles used on more robust patients. Thinner needles may be flexible and require tubes for insertion. The tip of the needle should not be made too sharp to prevent breakage, although blunt needles because the more pain [20].

Apart from the usual fusiform needle, there are also other needle types, which can be utilized, such as three-edged needles and the Nine Ancient Needles. Japanese acupuncturists use extremely thin needles that are used superficially, sometimes without penetrating the skin, and surrounded by a guide tube (a technique adopted in China and the West). Korean acupuncture uses copper needles and has a greater focus on the hand [21]**.**

Insertion

The skin was sterilized, e.g. with alcohol, and the needles are inserted, frequently with a plastic guide tube. Needles may be manipulated in various ways, e.g. spun, flicked, or moved up and down relative to the skin. Since most pain is felt in the superficial layers of the skin, a quick insertion of the needle is recommended.

Tools: the following tools were used for both groups.

 Plinth: It was used for the application of treatment.

 Cotton and Alcohol: It was used to clean the treated areas before application of acupuncture in both groups (A&B).

Position of the patient:

Procedures of Acupuncture application:

Each patient in both groups (A&B) was instructed briefly and clearly about the values of acupuncture in decreasing sacroiliac joint pain to gain her confidence and cooperation.

Application of acupuncture:

Each patient in both groups (A&B) received three sessions of acupuncture per week, each session was for 30 minutes for eight weeks, Patients were asked to avoid other treatments during the intervention period, and a total of 4 segmental points will be used (LI4, BL26, GB30 and BL54). The sterilized needles inserted intramuscularly in the area of treatment to a depth of 15-70 mm to evoke needle sensation, described as tension, numbness, and often a radiating sensation from the point of insertion, reflecting activation of muscle-nerve afferents. The needles left in situ for 30 minutes and manually stimulated every 10 minutes. Maternal heart rate and blood pressure were monitored before and after all treatments.

Position of the patient:

The patient lay in a comfortable side lying position.

Anatomical position of Acupuncture:

- LI4- This point is located on the dorsum of the hand, between 1 st and 2 nd metacarpal bones (Fig.1).
- BL26-This point is located at 1.5 cun lateral to midline level with the spinous process of L5 (Fig.2).
- GB30-This point is located at the junction of the lateral 1/3 and medial 2/3 of the distance between the greater trochanter and the hiatus of the sacrum (GV2) (Fig.2).
- BL54-This point is located at the midpoint of the transverse crease of the popliteal fossa between the biceps femoris and semitendinosus tendon (Fig.3).

Fig.(1): LI4 point

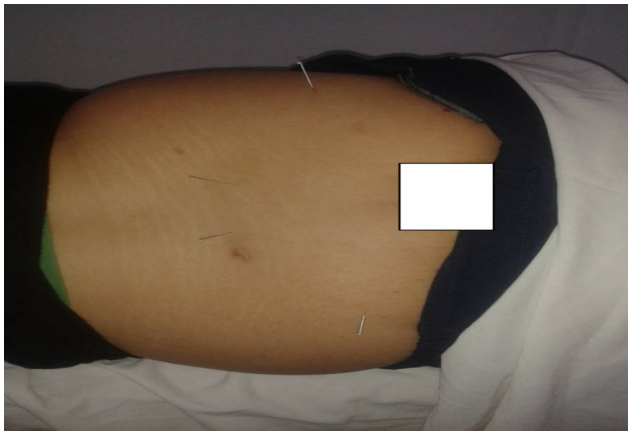

Fig.(2): BL26&GB30 points

Fig.(3). BL54 point

2.3. **Methods of Subject Evaluation:** both groups (A&B) were evaluated before and after 2 months of the exercise program by the following:

Present pain intensity (PPi) scale: used for measuring pain intensity in clinical practice was scored as being: no pain=0, mild pain=1, moderate pain=2, severe pain=3, unbearable pain=4 [22].

Oswestry disability questionnaire for measuring functional disability: used for assessing functional disability of each patient. It is valid and reliable. It consists of 10 multiple choice questions; patient select one sentence out of six that best describe her pain, higher scores indicated great pain [23].

2.4. Statistical Analysis:

The collected data of this study were expressed as mean ± standard deviation (SD). Comparison between normally distributed variables in the two studied groups (A&B) was performed using an unpaired t test. Comparison between not normally distributed variables in the two studied groups (A&B) was performed using the Mann-Whitney U test while the comparison between before and after assessment within the same group was performed using Wilcoxon Signed Ranks test. SPSS computer program (version 16 windows) was used for data analysis. P value less than or equal to 0.05 was considered significant and < 0.01 was considered highly significant [24].

3-RESULTS

3.1. General characteristics of the subjects in both groups (A&B):

There was no statistical significant difference in the mean values of age and BMI between the two groups (A and B) at the beginning of the study as p= 0.668 and p= 0.640, respectively (Table1).

Table 1. General characteristics of the subjects in both groups (A&B).

Variables	Group A (n= 20)	Group B (n= 20)	t value	P value
Age (yrs.)	25.85 ± 3.01	25.50 ± 2.01	0.432	0.668 (NS)
Height (kg.)	161.65 ± 4.64	160.15 ± 4.04	1.090	0.282 (NS)
weight (cm.)	74.6 ± 5.07	73.85 ± 3.91	0.524	0.604 (NS)
BMI (Kg/m^2)	28.51 ± 1.39	28.73 ± 1.53	-0.472	0.640 (NS)

3.2. Sacroiliac joint pain intensity assessed by PPi scale before and after the treatment program for both groups (A&B):

As shown in Table (2) Mann Whitney test was used to compare between the median values of PPS in both groups (A&B). Before the treatment, there was non statistical significant difference between group A [2.0 (2.0-4.0)] and group B [2.5 (1.0-4.0)] as p value was (0.689). On the other hand, after treatment findings recorded a significant decrease in the median values of PPS in group A [0.5 (0.0-3.0)] when compared with its corresponding values in group B [1.5 (0.0-4.0)] as p value was (0.036).

Table 2: Median values of the present pain intensity (PPI) in both groups (A&B) before & after the treatment.

Variables	**Pain intensity (score)**		**Z value**	**P value**
	Group A (n= 20)	**Group B (n= 20)**		
Before	2.0 (2.0-4.0)	2.5 (1.0-4.0)	-0.401	0.689 (NS)
After	0.5 (0.0-3.0)	1.5 (0.0-4.0)	-2.093	0.036*(S)

As shown in Table (3) Wilcoxon sign rank test was used to compare between before and after treatment of (PPI) within the same group.

Regarding the group A, there was a statistically highly significant decrease in the median value of PPI measured after treatment [0.5 (0.0-3.0)] when compared with its corresponding value in before treatment [2.0 (2.0-4.0)] as p value was (0.001).

Also in the group B, there was statistically highly significant decrease in the median value of PPI measured after treatment [1.5 (0.0-4.0)] when compared with its corresponding value in before treatment [2.5 (1.0-4.0)] as p was (0.001).The percentage of improvement in PPI was higher in group A (75%) than in group B (40%).

Table 3: Median values of the present pain intensity (PPI) measured before and after the treatment in both groups (A&B).

Variables	**Pain intensity (score)**	
	Group A (n= 20)	**Group B (n= 20)**
Before treatment	2.0 (2.0-4.0)	2.5 (1.0-4.0)

After treatment	0.5 (0.0-3.0)	1.5 (0.0-4.0)
Difference	1.5	1
Percentage of reduction	75%	40%
Z value	-4.179	-4.123
P value	0.001(HS)**	0.001(HS)**

Data are expressed as median (minimum-maximum). **HS= highly significant.

Regarding the group (A) before treatment, the majority of females had unbearable pain [4(20.0%)], severe pain [(25.0%)] and moderate pain [11(55.0%)] were improved after treatment where these females had no pain and mild pain, which are increased to [10(50.0%)] & [5(25.0%)], respectively, as shown in table (4).

Table 4: The PPI severity in group A measured before and after the treatment.

	Pre	**Post**
No pain	0 (0.0%)	10 (50.0%)
Mild pain	0 (0.0%)	5 (25.0%)
Moderate pain	11 (55.0%)	3 (15.0%)
Severe pain	5 (25.0%)	2 (10.0%)
Unbearable pain	4 (20.0%)	0 (0.0%)

Data are expressed as the number of (%).

While in the group (B): before treatment, the majority of females had unbearable pain [4(20.0%)], severe pain [6(30.0%)] and moderate pain [6(30.0%)] were improved after treatment where these females had moderate pain, mild pain and no pain which are increased to [5(25.0%)] &[6(30.0%)], and [4(20.0%)]respectively, as shown in table (5).

Table 5: The PPI in group B measured before and after the treatment.

	Before	**After**
No pain	0 (0.0%)	4 (20.0%)
Mild pain	4 (20.0%)	6 (30.0%)
Moderate pain	6 (30.0%)	5 (25.0%)

Severe pain	6 (30.0%)	3 (15.0%)
Unbearable pain	4 (20.0%)	2 (10.0%)

Data are expressed as number (%).

3.3. Functional Disability assessed by oswestery disability questionnaire before and after the treatment program for both groups (A&B):

As shown in Table (6) Mann Whitney test was used to compare between the median values of oswestery disability questionnaire in both groups (A&B). Before treatment, there was no statistical significant difference between the median value in group A (40.0 (25.0-80.0)) and group B (37.5 (20.0-65.0)) as z value was -0.611 and p value was 0.541. On the other hand, after treatment, there was a statistical significant difference between median value in group A (15.0 (10.0-45.0)) and group B (20.0 (10.0-60.0)) as z value was -2.026 and p value was 0.043.

Table 6: Comparison between the median values of oswestry disability questionnaire in the two studied groups measured pre- and post-assessment.

	Group A (n= 20)	Group B (n= 20)	Z value	P value
Before treatment	40.0 (25.0-80.0)	37.5 (20.0-65.0)	-0.611	0.541 (NS)
After treatment	15.0 (10.0-45.0)	20.0 (10.0-60.0)	-2.026	0.043*

Data are expressed as median (minimum-maximum). NS= p> 0.05= not significant; *p< 0.05= significant.

As shown in Table (7) Wilcoxon sign rank test was used to compare between before and after treatment of oswestry disability questionnaire within the same group.

Regarding the group A, there was a statistical significant decrease in the median value of oswestry disability questionnaire measured after treatment (15.0 (10.0-45.0)) when compared with its corresponding value in pre-assessment (40.0 (25.0-80.0)) as z value was -3.924 and p value was 0.001.

Also in the group B, there was a statistical significant decrease in the median value of oswestry disability questionnaire measured after treatment (20.0 (10.0-60.0)) when compared with its corresponding value in before treatment (37.5 (20.0-65.0)) as z value was -3.731and p value was 0.001). The percentage of improvement in oswestry disability questionnaire was higher in group A (62.5%) than in group B (46.7%).

Table 7: Comparison between the median values of oswestry disability questionnaire measured before and after the treatment in both groups (A&B).

	Group A (n= 20)	Group B (n= 20)
Before treatment	40.0 (25.0-80.0)	37.5 (20.0-65.0)
After treatment	15.0 (10.0-45.0)	20.0 (10.0-60.0)
Difference	25.0	17.5
Percentage of reduction	62.5	46.7
Z value	-3.924	-3.731
P value	0.001(HS)**	0.001(HS)**

Data are expressed as median (minimum-maximum). **p< 0.01= highly significant.

4- DISCUSSION

Postpartum sacroiliac joint pain is a serious issue for the ladies, as it affects their execution of the daily living activities so that, it affects her family and society [25].

Lumbo pelvic stabilization exercises that are directed at the local muscle system have been upheld by physiotherapists as a powerful method for enhancing so as to treat endless low back agony the dynamic stability of the lumbar spine [26].

The results of the present study revealed that treatment program containing lumbo-pelvic stabilizing exercise in addition to acupuncture (group (A) produced a significant reduction of pain intensity score and significant improving functional status compared to using acupuncture alone (group (B) after two months of treatment, which indicated that performing lumbo-pelvic stabilizing exercise and using acupuncture is more effective in reducing sacroiliac joint pain than using acupuncture alone.

Many studies supported the role of core stabilization in protecting the spine from excess shifting and shearing of vertebral structure the core stability model comprises of passive and active stabilization structures as well as a third, frequently slighted subsystem, called the neuromotor system. This fundamental system is important for the active structures, for example, muscles to give preemptive or rather fast reactions to the body's needs [27].

Stabilization exercises could be performed from many body positions. However, for the first phase of the rehabilitation process, a standout among the most usual suggested was those performed in 4-point kneeling, with the trunk in horizontal position and hands and knees touching the ground. These exercises lessened spinal loads and trained the recruitment pattern of certain trunk muscles [19].

The muscular and ligamentous relationships composing the lumbosacral connection are of great significance in stabilizing the lumbar vertebrae with sacroiliac joint and arrangement has been termed a 'self-bracing mechanism. The trunk muscles, the abdominals have been accounted for to build the stability of the lumbosacral and sacroiliac joint, further controls excessive anterior tilt of the pelvis [28, 29].

Studies have shown that part of core, i.e. transverse abdominal contraction diminishes the laxity of the sacroiliac joint. It was revealed that all core is required for ideal stabilization and performance in sacroiliac mechanics [30, 31].

"CORE" is described as a box with the abdominals in the front, paraspinals and gluteus in the back, the diaphragm as the roof, and the pelvic floor and hip girdle musculature as the bottom. Particular consideration has been paid to the core because it accommodates as a muscular corset that acts as a unit to balance out the body and spine, with or without limb movement [28].

Carolyn et. al. [30] studied the relation between the transverse abdominal muscles, sacroiliac joint mechanics and low back pain demonstrated that there is noteworthy reduction in the joint laxity in the sacroiliac joint when the transverse abdominal muscles were trained.

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The results agree with those of in the study of Barr et al. [31] they assessed the advantages of the lumbar stabilization program to treat low back pain proved their point that the core muscles strengthening does play an important role in the lumbar stabilization and consequently, diminishes low back pain.

These results are in concurrence with Christopher et al. [32] they studied the role of an incorporated back stability program in patients with chronic low back pain and revealed that the incorporated back stability program, including core strengthening along with the other trunk stabilizing exercises incorporated the patients with chronic low back pain by lessening their pain and disability.

Additionally, Fabio Renovato et. al. [33] performed a study wherein they took two groups where one group was trained with segmental stabilization exercises and the other with only superficial strengthening regime and in which he proved that both do reduce the pain, but segmental stabilization of the core muscles was better than the superficial strengthening regime in alleviating the pain and disability in patients with chronic back pain, and the superficial strengthening does not enhance transverses abdominis activation capacity.

Felipe Pivetta et. al. [34] put up a study which was, effects of a program for trunk strength and stability on pain, low back and pelvis kinematics, and body balance: A pilot study, wherein the outcomes recommended that the recruitmentment of trunk strength and stability has a

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beneficial outcome on the low back and pelvis pain and kinematics and in addition on body balance.

Craig Leibenson et. al. [35] studied the relationship between the sacroiliac joint musculature with lumbo pelvic instability and showed that the exercises of the key stabilizers of the lumbo pelvic region do re-establish the pain.

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Paulo et al. [36] stated that specific stabilization exercise was effective in lessening pain and disability in spinal and pelvic pain.

Richardson and Jull [26] they reported that the specific sub maximal training of lumbar stability muscles of the lumbar spine and adding of this training into functional tasks diminishes both pain severity and functional disability in patients suffering from low back pain.

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The outcomes were additionally supported by study [37] that used an Oswestry disability questionnaire to assess the patient's level of functional disability; they reported decrease in functional disability in stabilizing exercise group.

Stuge et al. [5] concluded that an individualized treatment approach with specific stabilizing exercises appears to be more valuable than physical therapy without specific stabilizing exercises for ladies with pelvic girdle pain after pregnancy. After intervention and at 1 year postpartum, the specific stabilizing exercise group demonstrated statistically and clinically significant decreased pain intensity, lower disability, and higher quality of life compared with the control group. Disability was decreased by more than 50% in the exercise group; changes were negligible in the control group. Significant differences were, likewise, recorded for physical tests, in favor of the specific exercise group.

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Furthermore, Noren et al [38] reported from a 3-year follow-up study of pregnant ladies with LBP and PGP is presumably brought about by inadequacy in the pelvic and dorsal muscles. The muscloskeletal system to the point of activating the muscle-tendon-fascia system that controls force closure of the pelvis. This, with duration of exercising for 20 weeks [39].

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Most likely added to the long-term effects. The maintained improvements may also be explicated by the essence of integrating the stabilizing exercises into everyday activities. The aims of the exercises were to get an improved ability to dynamically stabilize the lumbopelvic region during functional tasks and to change automatic patterns of muscle recruitment within the trunk musculature. As in the study [37] the women in the present study were asked to perform the cocontractions of the transverse abdominal wall muscles and multifidus, especially in circumstances where they encountered or anticipated pain or felt "unstable". This is held to be a key to reinforce motor programming, such that the patterns of

cocontraction would in the long run happen naturally, without a requirement for conscious control amid exercises and frequent stances of everyday living. The significance of motor control to arrange muscle recruitment between the small intrinsic spine muscles and the large musculature to ensure stability amid day by day activities is additionally highlighted in the study [40].

Contraction of the transversus abdominis has been appeared to diminish the laxity of the SI joint. This decline in laxity is bigger than that brought on by a bracing action using all the lateral abdominal muscles. These discoveries are in accordance with the authors' biomechanical model expectations and support the utilization of independent transversus abdominis contractions for the treatment of low back pain. Stabilizing exercises can be utilized to adjust muscular imbalances in strength and enhance force transfer, diminishing stress on the pelvis and lumbar spine [41].

Acupuncture is a system of medicine that advanced in China more than 2000 years ago. It includes the insertion of fine needles into particular, defined, points distributed over the body surface. Stimulation of these points is thought to be able to enhance a local and systemic healing response [42].

Acupuncture is one of the oldest forms of therapy, with roots in the ancient Chinese philosophy. It depends on the idea that vital energy (qi) courses through the body along distinct pathways or meridians, which, when imbalanced results in disease manifestation [43]. Needling of specific combinations of points along these meridians is accepted to reestablish harmony in the body and in this way diminishes side effects. While there are no clinical trials evaluating the utilization of acupuncture for the treatment of SI joint pain in the general population, much has been written investigating the efficacy of this treatment modality in the low back pain population. Acupuncture has been reported to be efficacious for side effect alleviation, however, not more than conventional therapies or 'sham acupuncture [44,45].

Regarding group (B) the reduction of SIJ pain after the application of acupuncture has been determined that acupuncture application increments endomorphin-1, beta endorphin, encephalin, and serotonin levels in plasma and brain tissue. It has been reported that the increases of endomorphin-1, beta endorphin, encephalin, serotonin, and dopamine cause analgesia, sedation, and recovery in motor functions. They, likewise, have immunomodulation effects on the immune system and lipolitic effects on metabolism. Because of these effects, acupuncture is used in the treatment of pain syndrome illnesses [46].

It can be concluded that stabilizing exercises for lumbo-pelvic muscles in addition to using acupuncture decrease of postpartum sacroiliac joint pain and improve the function disability in Egyptian females.

Conclusion:

Provide conclusion of the study :[12H]Comment

ACKNOWLEDGMENTS

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Conflicts of interest

There are no conflicts of interest.

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