

Effectiveness of Tai Chi Exercise on Stress and Postpartum Blues among Postnatal Mothers

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Abstract

Background: Postpartum blues are a common mental health problem during the early postpartum period. There are many alternative therapies to treat this. Tai Chi, which was initially created for self-defense, has developed into a graceful type of exercise that is now used to treat stress and several other health issues. Through its smooth, flowing movements, Tai Chi has been compared to meditation in motion. **Therefore, the current study aimed to** investigate the effectiveness of Tai Chi exercise on stress and postpartum blues among postnatal mothers. **Study design:** A quasi-experimental research design was used to fulfill this study using a pre-test and post-test one-group design. **Methods:** the study was applied in the Postpartum Unit at Mansoura University Hospital and home visit. **Subject:** the study included a convenient sampling technique of 100 postnatal mothers. **Two tools** were used: Tool I: Structured interview questionnaire and Tool II: Perceived Stress Scale-10 (PSS-10). **Results:** a statistically significant difference was found between stress mean scores and postpartum blues at ($P=0.001$) pre and post-Tai Chi exercise application. Also, a statistically significant difference in pre- and post-Tai Chi exercise application between the groups was reported in terms of postpartum blues levels. **Conclusion:** The Tai Chi exercise application has a significant reduction in mean post-test stress and postpartum blues scores among the studied postnatal mothers. **Recommendations:** Applying a training program for pregnant women during the antenatal period about the importance of the Tai Chi exercise application to be able to use them as a part of routine care during the postpartum period.

Keywords: Postnatal mothers, Postpartum blues, Stress, Tai Chi exercise

Introduction:

Postpartum blues might arise as a result of multiple risk factors. These include a history of significant depression or dysthymia, a history of mood swings linked to the menstrual cycle or pregnancy, a higher number of pregnancies during one's lifetime, or a family history of postpartum depression. Low income, ethnic or racial background, gravidity status (primiparous vs. multiparous), planned vs. unplanned pregnancy, spontaneous pregnancy vs. IVF, mode of delivery (vaginal vs. cesarean), family history of mood disorders, or history of postpartum depression in the past are the factors that, when present, do not predispose a patient to the development of postpartum blues (Bloch et al., 2020).

Most of the pathogenesis remains unknown. On the other hand, it has long been hypothesized that hormonal fluctuations are one of the main causes of postpartum mood swings. Estradiol, progesterone, and prolactin levels usually drop sharply in the postpartum period. The emotional swings that happen throughout the menstrual cycle, including those seen in premenstrual dysphoric disorder, are also linked to a decrease in these

hormones. Additional research has suggested that significant risk factors or etiological characteristics that may predispose a woman to the development of postpartum blues include elevated monoamine oxidase levels and decreased serotonergic activity in the immediate postpartum period (O'Hara & Wisner, 2018).

Crying, dysphoric affect, irritability, anxiety, insomnia, and changes in appetite are all signs of postpartum blues. When these symptoms do arise, they shouldn't be consistent with major depressive disorder or postpartum depression, if they happen during the postpartum phase. For the symptoms to be considered consistent with postpartum blues, they must typically appear two to three days after delivery and go away in two weeks. The diagnostic criteria for postpartum depression are met if the symptoms last longer than two weeks (O'Hara & Wisner, 2018).

As a specific type of depression, postpartum blues and stress depression, which causes a second psychological trauma to women who have just experienced the pain of childbirth and have not fully recovered, lead to worse medical harm than general depression. postpartum blues cause an adverse hazard to the mother's physical and mental health, affect the baby's

future development and growth, and generate irreparable family burdens and socio-economic problems (Hahn et al., 2021). Considering the safety requirements for lactation and the expectation of a rapid response to treatment, most women with postpartum blues prefer psychological to pharmacological treatments, and a desire to avoid medication, which the search for safe and effective alternative therapies has attracted wide attention (Carter et al., 2019).

Women with postpartum depression typically have higher levels of co-morbid stress, even though postpartum depression, the most common and well-known complication of postpartum "blues," shares many traits and is diagnosed using the same criteria as major depressive disorder. Additionally, compared to women with major depressive illness without a peripartum beginning, these women have a higher chance of developing bipolar disorder in the future (Brummelte & Galea, 2022).

Due to the rapid changes in postpartum hormone levels, it not only triggers psychological symptoms such as depressed mood, loss of interest, anhedonia, feelings of guilt or worthlessness, impaired concentration, and suicidal thoughts but also leads to somatic symptoms such as galactostasis, fatigue, insomnia, nausea and vomiting, difficulty in caring for young children, sleep and appetite disturbance, postpartum blues is a representative psychosomatic disease, which psychological symptoms and somatic symptoms could interact with each other (American Psychiatric Association, 2023).

Tai Chi originated in ancient China thousands of years ago and was formed through historical precipitation under the guidance of the essence of Chinese folk and military martial arts, breathing and meditative techniques, and traditional Chinese medicine theory (Tang & Gu, 2022). Just like the academic thoughts of traditional Chinese medicine such as "Use exercise to regulate emotions", and "the body and the spirit are jointly regulated", it is also a kind of exercise therapy that harmonizes yin-yang and promotes homeostasis between body and mind (Pan et al., 2019). It is widely loved by the Chinese people and even the Asian people. Tai Chi training can be launched in a group-based pattern which may impel practitioners to stay motivated and enthusiastic to continue practicing. This is especially because of the social benefits yielded by the communications and interactions regarding Tai Chi (Gothe & Kendall, 2020).

In previous studies, Tai Chi can alleviate or treat somatic or psychological diseases, the former such as depression, stress, and anxiety, (Wang et al., 2019) and physical and psychosocial impairment among individuals with impaired physical mobility (Zhao et al., 2021).

Tai Chi is a graceful type of exercise that was formerly a part of ancient Chinese culture. It entails a series of movements carried out slowly, intently, and in tandem with deep breathing. Tai Chi, also known as Tai Chi Chuan, is a self-paced, non-competitive technique of light physical activity and stretching. Your body will be in constant motion since each posture leads seamlessly into the next. Tai Chi offers a wide range of styles. Every style may gently highlight different tai chi ideas and techniques. Every style has its variations. Some TaiChi styles could concentrate on maintaining good health, while others might concentrate on the martial arts component. Similar to yoga, Taichi is a form of meditative movement

Primary care physicians, including obstetricians, need to be skilled in diagnosing and treating postpartum depression and be aware of its symptoms. In addition to educating patients, obstetric nurses should keep an eye out for the disorder's symptoms. A pharmacist should be consulted if the patient needs antidepressant therapy to ensure that the right agent is chosen, that the dosage is correct and that medication reconciliation is done to avoid drug interactions. The prescriber/treating clinician must be informed of any problems by both the pharmacy and the nursing staff. By using these interprofessional techniques, patient outcomes will be maximized (Halbreich et al., 2022).

Patients experiencing postpartum blues should undergo a thorough evaluation to see whether they meet the requirements for postpartum depression diagnosis. Making sure the symptoms don't match the criteria for a depressive episode at the time of presentation and that they don't last longer than two weeks would be necessary to achieve this. The doctor should start an antidepressant and supportive psychotherapy treatment plan as soon as postpartum depression, also known as depression with peripartum onset, is officially diagnosed. Antipsychotics should be taken into consideration concurrently with a diagnosis of postpartum depression in case psychotic symptoms are observed (Zanardo et al., 2020).

Significant of the study:

Postpartum blues are incredibly frequent, affecting at least 50% of women during the first few weeks following childbirth, according to estimates. Women who experience postpartum blues are roughly 4–11 times more likely to experience postpartum severe depression. The interview is the primary diagnostic tool, as it is for all mental disorders. A diagnosis of postpartum blues can be made in the case of a female patient who appears either right away after delivery or within two weeks of it, based on her low mood and depressive symptoms that don't fit the criteria for major depressive disorder. A postpartum

blues diagnosis should not be given if the symptoms of major depressive illness are present or if the mood disorders last longer than two weeks after delivery (Ghaffari & Ghaznein, 2020).

Being one of the important occasions, the postnatal period requires extra attention. Among the most prevalent postpartum mood disorders, postpartum blues are usually fleeting, lasting anywhere from a few hours to a week. Crying fits and depressive episodes are typical symptoms of postpartum blues. Irritability, stress, generalized anxiety, and emotional reactivity are further symptoms. These symptoms often start three to four days after delivery, peak on the fifth day, and go away by the tenth postpartum day. The postpartum blues can be lessened by numerous therapies.

Those who are diagnosed with postpartum depression or postpartum psychosis are more likely to experience postpartum blues symptoms. According to a specific study carried out in Africa, women who were diagnosed with "postpartum blues" on the fifth day after giving birth were twelve times more likely to receive a postpartum depression diagnosis one month later, and ten times more likely to receive a postpartum depression diagnosis two months later (Zanardo et al., 2020).

It is possible to think of peripartum mood disorders as existing on a spectrum, with postpartum depression being more incapacitating and postpartum "blues" being milder and self-limited. Postpartum blues, according to its diagnostic criteria, are temporary and self-limiting. As a result, it resolves itself and doesn't need any medical intervention other than psychosocial assistance, education, validation, and assurance (Seyfried LS, Marcus, 2020).

Aim of the study

The current study aimed to investigate the effectiveness of TaiChi exercise on stress and postpartum blues among postnatal mothers.

Research hypothesis:

H1: Postnatal mothers who applied TaiChi exercise will experience lower mean scores of stress post-application than pre-application.

H2: Postnatal mothers who applied the TaiChi exercise will experience lower mean scores of postpartum blues level post-application than pre-application.

Subjects and Methods:

Research design:

A quasi-experimental research design was used to fulfill this study using a pre-test and post-test one-group design.

Setting:

The study was applied in the Postpartum Unit at Mansoura University Hospital and home visit

Sample:

The study included a convenient sampling technique of 100 postnatal mothers

Tools of data collection:

Tool (I): Structured interview questionnaire: Used to collect data regarding personal and **Obstetric** data, it was developed by the researchers based on an extensive up-to-date literature review, it consisted of two parts:

Part I: This included 4 items related to personal data such as (age, educational level, occupation, and residence)

Part II: Postnatal mother's Obstetric and Postpartum data: which included 4 items related to obstetric history such as (gravidity, parity, and methods of current delivery).

Tool II: Perceived Stress Scale-10 (PSS-10):

The Perceived Stress Scale-10 (PSS10) tool was adopted from **Cohen et al., (1983)** it consists of a ten-item self-report scale that examines individual stress levels. The nurses are asked to rate their feelings and thoughts during the past month. Each item was answered by the nurses on a five-point scale ranging from never (0) to very often (4). Therefore, each nurse's score ranged from 0 to 40. Higher scores indicated higher perceived stress levels.

Scoring system:

PSS scores between 0 and 13 indicated low stress levels; 14-26 indicated moderate stress, and 27 or above indicated severe stress. Four items used reverse scoring (items 4, 5, 7, 8). Convergent validity was obtained through correlational analysis of the PSS with measures on anxiety, depression, helplessness, and disease activity. The scale internal consistency was 0.78.

Tools validity and reliability

The tool was tested for content validity by a jury of three experts in the field of Obstetrics and Gynecological nursing staff and two experts in psychiatric and community health nursing professors who reviewed the instruments for clarity, relevance, comprehensiveness, understanding, applicability, and easiness, in establishing

the reliability and statistically done Alpha Cronbach way to check the stability of the internal consistency of the instrument 1 was 0.923.

Pilot study

After developing the tools, a pilot study was conducted on 10% (10 postnatal mothers) of cases to test the feasibility and applicability of the tools used in the current study for data collection as well as to determine the time required to be applied and no modifications were done of the questionnaire and the postnatal mothers who were tested in the pilot study were included in the study sample.

Ethical considerations:

Written initial approval was obtained from the dean of the Faculty of Nursing and the research ethics committee of the Faculty of Nursing, The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and get their approval. Written consent was obtained from the postnatal mothers to participate in the study after the objective of the study was explained to them. The researchers informed the postnatal mothers that, the study was voluntary, they were allowed not to participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential.

Fieldwork:

Three days a week, from 9 am to 12 pm, the researchers have visited the previously chosen sites. They introduced themselves to postnatal mothers and explained the purpose of the study. From the start of August 2023 to the end of January 2024, a period of six months was used to gather data. Every interview tool took between thirty to forty minutes to complete.

Implementation phase:

After assessing the level of stress the selected participants were given TaiChi exercise for 25 minutes for 21 days.

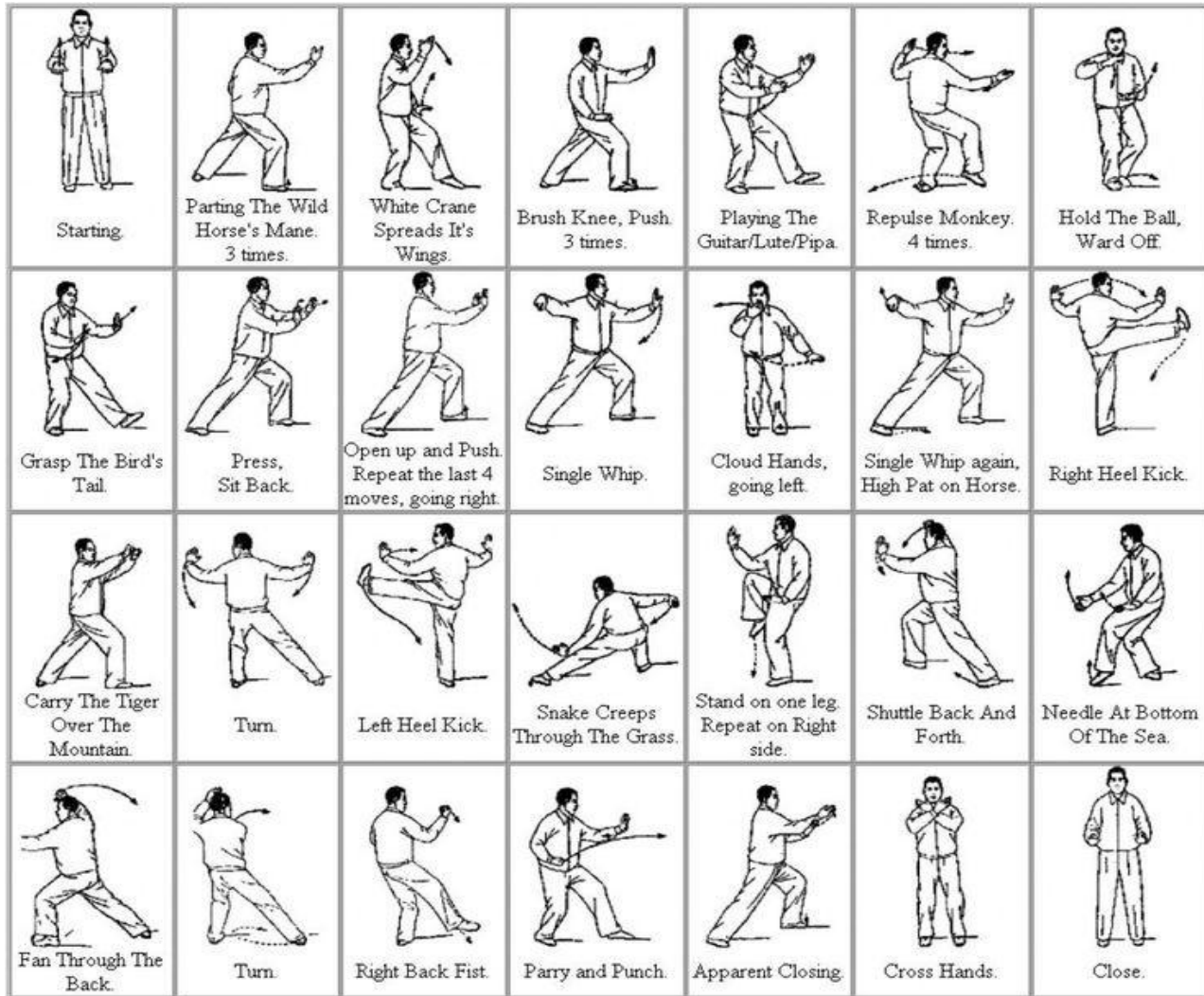
The investigator conducted the pretest by using the Perceived Stress scale to assess the level of stress. Non non-probability convenience sampling technique was used to select the samples. The investigator obtained oral consent from the selected samples before the study and their data were also collected. After the pretest, the Taichi exercise was performed on the studied sample. the investigator gathered them and taught them about the TaiChi exercise for 25 minutes for 21 days. The Taichi exercise was demonstrated by the investigator for the first week and asked them to do it along with the investigator. From the 8th to -the 21st day the studied sample demonstrated the series of steps in the Tai Chi exercise along with the supervision of the investigator.

The researcher educated the studied postnatal mothers about the methods of the TaiChi exercise which refers to peng (ward off), lu (roll back), ji (press), a (push), cai (pull down), lie (split), zhou (elbow strike) and kao (lean). It represents the eight fundamental methods of training the body's power and lays the foundation of all the skills and techniques of Tai Chi exercise.

The researcher instructed the studied postnatal mothers that during tai chi exercise, plant your feet into the ground and shift the weight from the right to left leg as well as perform various movements that flow from one to the next. There may be anywhere from 13 movements (or positions) to dozens in a single session. Tai chi is considered a mind-body exercise.

The researcher instructed the studied postnatal mothers to Bend their elbows and bring their hands to the shoulders with the palms facing forward. The weight is on the back leg. Push arms forward and shift weight onto the front leg with palms facing forward. With hands facing down bring weight back to the middle.

The intervention package included two face-to-face educational sessions in the first week, three weekly face-to-face Tai Chi sessions in the first 3weeks, a Tai Chi video, three weeks of home-based Tai Chi practice, a written educational booklet, a logbook, and three weekly booster phone calls daily until the second hone visit in the last third week.



- The baseline data from their records was used to evaluate the studied mothers based on personal and obstetric data.
- The postpartum blues and stress levels of the postnatal mothers were documented twice (immediately and three weeks later after the intervention), after the tai chi exercises.

III: Evaluation phase:-

The community health researcher conducted a one-day home visit with each of the mothers during the following three weeks of follow-up as a posttest using the Perceived Stress Scale to assess the effectiveness of the Taichi exercise on postpartum blues also, assess postpartum blues level.

Statistical analysis:

The SPSS version (19) was used for both data entry and analysis. Numbers, percentages, and mean standard deviations were used to display the data. The qualitative variables were compared using a chi-square test. Quantitative data were reported as mean standard deviation (SD) if they were normally distributed. Either the Fisher's exact test or the Chi-Square test was used to assess how comparable the demographic attributes of the two groups were. To look for variations in physiological parameters across the groups, the repeated measurements of analysis of variance (RM-ANOVA) test was used. P-Values less than 0.05 are regarded as statistically significant.

Results:

Table (1): illustrates that 52% of the studied sample were in the age group from 25-35 year years old.

Regarding gender 66% of the studied sample were living in urban areas and 42% of them had secondary education.

Table (2): Portrays that 64% of the studied mothers had from 1-3 **gravity** (60%) of them had from one to three parity and the majority of them (82%) their delivery was normal.

Table 3 shows that in the pretest, the majority of studied mothers (66%) had high perceived stress, and (34%) had moderate levels of stress. In the post-test, the majority of studied mothers (84%) their stress levels and had low stress, and (16%) had moderate levels of stress.

Table 4 shows that in the pretest, the mean and standard deviation of the level of stress among studied mothers is 32.57 ± 5.22 . In the post-test, the mean and standard deviation of the level of stress among studied mothers is 11.22 ± 3.56 .

Table 5 illustrates that the mean score regarding the effectiveness of Tai Chi exercise on stress among studied mothers in the pretest was 32.57 ± 5.22 and the

mean score in the posttest was 11.22 ± 3.56 . The calculated paired t' t-test value of $t = 33.45$ shows a statistically significant difference regarding the effectiveness of TaiChi exercise on stress among studied mothers pre and post-test.

Table (6):- Shows statistically significant difference, decreasing and improving in mean scores regarding the postpartum blues among the studied mother's pre and post-Tai Chi exercise application at $P < 0.001$.

Figure 1 predicts that after the TaiChi exercise application regarding the level of postpartum blues, there was a significant reduction in the level of postpartum blues among the studied postnatal mothers post Tai Chi exercise application. In the assessment of the posttest postpartum blues level displays that (70%) had a mild level of postpartum blues, (30%) had a moderate postpartum blues level, and none had severe postpartum blues.

Table (1): Personal data among the studied postnatal mothers in the (n=100)

Personal data	the studied postnatal mothers (n=100)	
	No	%
Age		
from 18-25 year	52	52
from 25-35 year	48	48
Residence		
Urban	66	66
Rural	34	34
Education		
Illiterate	24	24
Primary	26	26
Secondary	42	42
University	8	8

Table (2): The studied postnatal mothers distribution regarding obstetric history

Obstetric history	The studied postnatal mothers (n=100)	
	No	%
Gravity		
1-3	64	64
3-5	36	36
Parity		
1-3	60	60
3-5	40	40
Methods of current delivery		
Normal	82	82
Cesarean	18	18

Table 3: Comparison between pretest and post-test of the stress levels among the studied mother's pre and post-TaiChi exercise application (n=100)

Level of Stress	Pre Test		Post Test	
	No	(%)	No	(%)
Low Stress	0	0	84	84
Moderate Stress	34	34	16	16
High Perceived Stress	66	66	0	0

Table 3: Differences between mean scores pretest and post-test of the stress levels among the studied mother's pre and post-TaiChi exercise application (n=100)

Items	Pre Test	Post Test
	Mean Standard deviation	Mean Standard deviation
Level of Stress	32.57±5.22	11.22±3.56

Table 5: Effectiveness of TaiChi exercises on stress among the studied mothers. pre and post-TaiChi exercise application (n=100)

	Phase	Mean	Standard Deviation	Paired to test	P value
TaiChi Exercise On Stress	Pretest	32.57	5.22	33.45(S)	1.576
	Posttest	11.22	3.56		

****Significant level at P value < 0.01**

Table 6: Differences in mean scores regarding postpartum blues levels among the studied mother's pre and post-TaiChi exercise application (n=100)

Items	Pre-intervention	Post-intervention	P - value
	Mean ±SD	Mean ±SD	
Postpartum blues	66.34±8.67	44.33±8.23	12.37 P=<0.001**

****Significant level at P value < 0.01**

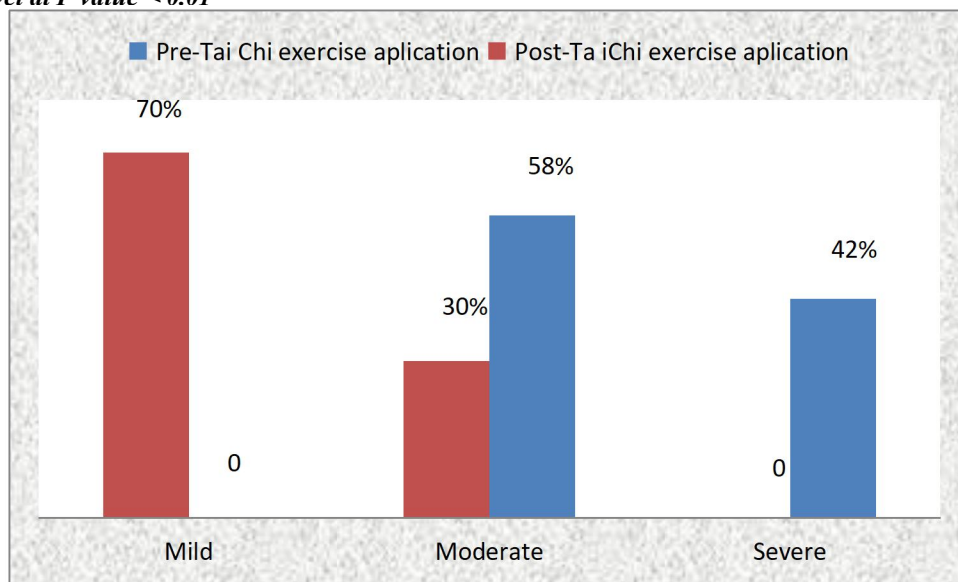


Figure 1: Total Postpartum Blues levels among the studied postnatal mother's pre and post-TaiChi exercise application (n=100)

Discussion:

Tai Chi, also known as Tia Ji Quan or Taiji, is an ancient Chinese martial technique that has been developed over three centuries. The word "tai chi" means "supreme ultimate." Tai Chi is a popular aerobic workout for both young and older persons that ranges in intensity from low to moderate. According to **Lan et al. (2019)**, it consists of breathing, mental focus, physical balance, relaxed muscles, and thoughtful integration that support the harmony between the body and mind. Tai chi is said to be able to cure headaches, dizziness, sleeplessness, and neurasthenia brought on by cerebral cortex activity. Tai Chi influences blood viscosity, elasticity, and platelet function as an aerobic workout modality that improves microcirculatory function. In practitioners, it also works well to avoid diabetes (**CY Leung et al., 2021**).

The results of the present investigation showed that over half of the sample fell within the 25–35 age range. A lack of information could be caused by young age.

Based on the results of the current study, most of the mothers who were studied (66%) reported feeling a lot of tension during the pretest. Most mothers in the study reported reduced stress and low-stress levels in the posttest. According to the researchers, the mothers in the study had less stress when they used Tai Chi exercise as a relationship method.

The current study's findings demonstrated that among the mothers under investigation, the mean and standard deviation of their stress level during the pretest were 32.57 ± 5.22 . The mean and standard deviation of the stress level among the women under study in the post-test are 11.22 ± 3.56 . According to the researchers, the results both supported the need for Tai Chi exercise application among the moms in the study and provided evidence of its efficacy. This outcome was consistent with research done in 2024 by Yazhini et al., which discovered that the Tai Chi exercise was useful in lowering stress levels in the sample under study.

According to the current study's findings, there was a statistically significant difference between the pre- and post-test results for the study mothers' use of Tai Chi exercise in reducing stress. It demonstrated the effectiveness of the Tai Chi exercise application, according to the researchers. Tai Chi has been shown to reduce or treat physical and psychological illnesses in the past. The former includes conditions like cardiovascular disease (**Huang et al., 2021; Ren et al., 2017**) and

chronic obstructive pulmonary disease (Wu et al., 2018), while the latter includes conditions like cognitive impairment (**Lin et al., 2021**).

The current study's findings are also consistent with those of **Wang et al. (2019)**, who found that using Tai Chi exercises can reduce anxiety and depression and treat a few common psychosomatic illnesses. Furthermore, the current study's findings are consistent with those of **Zhao et al. (2021)**, who discovered that Tai Chi training improved the physical and psychosocial impairment of people with limited physical mobility.

The results of this study showed that there was a statistically significant difference between the mothers in the study's pre- and post-Tai Chi training groups' mean scores regarding the postpartum blues, which improved and decreased. The researchers say that this result demonstrates the positive effects of doing Tai Chi exercises, which meet the needs of new moms and reduce their levels of postpartum depression. This finding was corroborated by a study by **Steffen et al. (2020)**, who investigated the effects of Tai Chi exercises on stress reduction and found that stress decreased following Tai Chi exercise application. Furthermore, a study by **Lin et al. (2021)** examined the impact of Taichi exercises on stress and anxiety in teenage college students, and the results showed that Taichi exercises reduced stress levels among the studied sample.

The results of the current study showed that there was a significant decrease in the level of postpartum blues among the postnatal mothers under study following the use of Tai Chi exercise. **Huang et al.'s (2021)** findings, which showed Tai Chi training was beneficial in lowering postpartum anxiety, tension, and depression, corroborate this outcome. **Follador et al. (2019)** discovered similar outcomes. Similarly, the same conclusions were reported by **Shamona et al. (2018)**. Additionally, **Upadhyay et al. (2020)** found that applying Tai Chi exercise to the examined sample reduced the symptoms of postpartum blues. According to studies by **Savarimuthu et al. (2020)** and **O'Hara et al. (2019)**, Tai Chi activity helps with postpartum depression.

Conclusion:

It was determined based on the study's results and hypothesis that the Tai Chi exercise application has a significant reduction in mean post-test stress and postpartum blues scores among the studied postnatal mothers.

Recommendations:

The following suggestions are put forth in light of the findings of the current study:

- Applying a training program for pregnant women during the antenatal period about the importance of the Tai Chi exercise application to be able to use them as a part of routine care during the postpartum period.
- Additional research on the impact of Tai Chi exercise application for mothers to reduce the negative physical and psychological effects during the postpartum period.
- To enable generalization, more investigation and replication of this work with a large sample size are needed.

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