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The effect of combining post-partum yoga and pelvic floor training on life quality of post-partum mothers

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ABSTRACT

Background: *Data from the World Health Organization (WHO) indicate that the postpartum phase has the highest rates of maternal death and morbidity. In the first year following childbirth, almost 50% of women experience mental health issues and declining life quality scores on the physical-emotional dimension significantly.*
Objectives: *This study aims to determine the effect of the combination of postpartum yoga and pelvic floor training on the life quality of postpartum mothers.*
Methods: *This research was a Quasy Experimental Pre-Posttest Design of nonequivalent control groups which was conducted from February to August 2023 in Mengwi I Health Center, Badung Regency, Bali. The sample in this study consisted of 36 postpartum mothers in the control group and 36 postpartum mothers in the intervention group. Pre-data was in the form of quality of life before the intervention was given to the control and intervention groups and post-data was taken after the intervention was given and then data analysis was carried out using the Mann-Whitney test and the Wilcoxon test.*
Results*: The results showed that the mean value of the increase in life quality scores in the intervention group was greater than the control group. In the 1st domain (physical healthiness) there was a significant difference between the two groups after study (p-value = 0.000). In the 2nd domain (psychological well-being) there was a significant difference between the two groups after study (p-value = 0.000). In the 3rd domain (social relationship) there was a significant difference between the two groups after study (p-value = 0.000). In the 4th domain (environmental dimension) there was a significant difference between the two groups after study (p-value = 0.000). Lastly, in the 5th domain (general healthiness) there was a significant difference between the two groups after study (p-value = 0.000).*
Conclusions: *There is an increase in the life quality of postpartum mothers after being given a combination of postpartum yoga and pelvic floor training.*

KEYWORD: *life quality; pelvic floor training; postpartum mothers; postpartum yoga;*

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INTRODUCTION

According to WHO statistics, the highest maternal mortality and morbidity rates occur in the postpartum period. Studies in Australia and the United States show that more than 50% of mothers have mental health problems in the first year after giving birth. A study in the United States showed a significant decrease in postpartum quality of life scores on the physical-emotional dimension(1).

Following labor, the postpartum phase is a time of recuperation and normal physiological changes involving physiology, anatomy, and psychology. It is necessary to be able to address mothers' physical and psychological requirements throughout the postpartum period. According to several research, only a small percentage of new mothers survive the postpartum period in excellent health. Back discomfort, exhaustion, and other issues are common throughout the postpartum period. This discomfort is experienced in the breasts, the perineum, and the uterus(2).

This pain often causes other complaints in postpartum mothers such as sleep disturbances, anxiety, and breastfeeding disorders. So that this has a significant effect on the dimensions of quality of life which include physical, emotional-psychological, social, and environmental healthiness. Quality of life is a multidimensional concept that affects individual performance in physical, psychological, social, and spiritual aspects of life and can be influenced by political, cultural, economic, and spiritual beliefs(3).

According to certain research, yoga, aerobic exercise, pilates exercises, warm baths, and lavender aromatherapy inhalation are non-pharmacological approaches that can be used to enhance the physical and mental well-being of new mothers and thereby contribute to their quality of life(4).

Other research states pelvic floor training can improve muscle strength, flexibility, and endurance as well as restore injured tissue and contribute to maintaining normal life activities in postpartum mothers. In recent years pelvic floor training involving the pelvic floor and abdominal muscles has shown positive effects on the quality of life of postpartum mothers. Various studies have been conducted to improve both physical and psychological health in postpartum mothers (5). Several studies have examined the effectiveness of postpartum yoga in improving emotions and psychology which are part of the dimensions of quality of life. Apart from postpartum yoga, other research states that postpartum mothers who regularly do pelvic floor training will improve physical health which is part of the quality of life dimension. With these studies, researchers want to combine postpartum yoga and pelvic floor training to see the effect on the quality of life of postpartum mothers. However, it is believed that no research has been done to yet on the benefits of postpartum yoga and pelvic floor training for postpartum moms' quality of life, thus this is a novelty of this study. This study

aims to determine the effect of the combination of postpartum yoga and pelvic floor training on the life quality of postpartum mothers(6).

MATERIALS AND METHODS

This research was a Quasy Experimental with a Pre-Posttest Design of non-equivalent control groups which was conducted from February to August 2023 in Mengwi I Health Center, Badung Regency, *Bali*. The study included all third-day postpartum mothers who had previously experienced a problem-free, routine child-birth.

The materials usually used in this research are the WHOQOL-BREF (World Health Organization Quality of Life-BREF) questionnaire to assess the mother's quality of life pre-post intervention, maternal health books to find out the mother's health history, yoga equipment, namely a yoga mat and music for relaxation. The sample was chosen using a basic random-type probability sampling procedure, yielding 72 samples in total that were split into two groups: the interventional group and the control group. The sample in this study consisted of 36 postpartum mothers in the control group and 36 postpartum mothers in the intervention group. Postpartum yoga combined with pelvic floor training is an independent variable. The life quality of postpartum mothers is a dependent variable. The steps of pelvic floor training and postpartum yoga were included in the standard operating procedures (SOP) re-search instrument for the independent vari-able. The World Health Organization Quality of Life Bref (WHOQOL-Bref) questionnaire is used as the study tool for the dependent variable. This study uses a data difference test, using a significance of 0.05. The data will be tested for data normality using Kolmogorov-Smirnov, provided that if the data is normally distributed (significance > α) then use the T-test. If the data is not normally distributed (significance < α) then use Wilcoxon (12). The data that has been collected is processed with computer assistance using the SPSS version 23.0 system.

RESULTS AND DISCUSSION

RESULTS

Subject Characteristics

The characteristics of the subjects were presented to determine the equivalence between the treatment and control groups at the beginning of the study. The two groups were compared which included parity, occupation, education, and age.

Table 1 shows that the characteristics of respondents based on primigravida (47,2%), most of them as a dealer (41,7%), and most of them graduated from high school as many as 22 respondents (22 %).

Table 2 shows that the characteristics of respondents based on age was 26.33±3.48 with p-value >0.05.

Bivariate Analysis

Results of life quality of postpartum mothers before being given the combination

Table 1. Demographic characteristics of subjects

Variable	Group				p-value
	Control N=36		Intervention N=36		
	n	%	n	%	
Parity					
1	18	50	17	47.2	0.946*
2	13	36.1	15	41.7	
3	3	8.3	2	5.6	
4	2	5.6	2	5.6	
Occupation					
Laborer	2	5,6	2	5.6	1.000*
Housewives	11	30.6	11	30.6	
Dealer	15	41.7	15	41.7	
Private employee	8	22.2	8	22.2	
Education					
High school	22	61.1	22	22	1.000*
Associate degree	9	25	9	9	
Bachelor	5	13.9	5	5	

*Test description: *) Chi-Square*

Table 2. Age characteristic

Variable	Group	Mean (SD)	p-value	(95%CI)
Age	Control Intervention	26.33±3.48	0.162*	-3.215

*Test description: *) T Independent Test*

Table 3. Life quality of postpartum mothers before being given a combination of yoga and pelvic floor training

Life Quality	Mean (SD)	Mean Difference	p-value	CI 95%
Control	52.250±20.813	-1.25	0.812*	-10.643 – 8.143
Intervention	53.500±19.115			

*Test description: *) Mann Whitney*

of postpartum yoga and pelvic floor training.

Table 3 shows that the life quality of postpartum mothers before being given a combination of yoga and pelvic floor training in the control group was 52.250 ± 20.813 which means in the moderate category. The quality of life of postpartum mothers in the intervention group was 53.500 ± 19.115 which means in the moderate category. The results of statistical tests showed no difference in the quality of life of postpartum mothers in both the control group and the treatment group before the study (p-value 0.812).

Table 4. Life quality of postpartum mothers after being given a combination of yoga and pelvic floor training

Life Quality	Mean (SD)	Mean Difference	p-value	CI (95%)
Control	53.027±8.016	-18.611	0.000*	-22.03 – 15.183
Intervention	71.638±6.485			

*Test description: *) Mann Whitney Test*

Table 5. Life quality of postpartum mothers before and after being given intervention

Life Quality	Control		p-value	Intervention		p-value
	pre	post		pre	post	
Mean(SD)	52.250±20.813	53.027±8.016	0.291*	53.500±19.115	71.638±6.485	0.000*
Delta	-0.777			-18.138		
Mean (SD)	0.75±2.372			18.222		0.000**

*Test description: *) Wilcoxon Test **) Mann Whitney Test*

Table 6. Differences in life quality based on quality of life domains

Life Quality	Pre-Test		Post-test	
	Mean (SD)	p-value	Mean (SD)	p-value
1st Domain				
Control	52.222±22.053	0.748*	53.583± 9.271	0.000*
Intervention	54.138± 19.658		75.333±4.690	
2nd Domain				
Control	51.972±18.836	0.834*	51.888±7.178	0.000*
Intervention	53.694±16.843		70.833±6.349	
3rd Domain				
Control	52.222±22.053	0.765*	56.472±9.302	0.000*
Intervention	53.888±20.181		73.333±9.561	
4th Domain				
Control	52.666±18.884	0.860*	53.111± 7.459	0.000*
Intervention	53.444±17.748		73.416±8.797	
5th Domain				
Control	52.222±22.053	1,000*	50.555±10.126	0.000*
Intervention	52.222±22.053		65.555± 9.085	

Test description:) Mann Whitney test*

Results of life quality of postpartum mothers after being given a combination of yoga and pelvic floor training

Table 4 shows that the life quality of postpartum mothers after being given a combination of yoga postpartum and pelvic floor training in the control group was 53,027 ± 8,016 which means in the moderate category. Meanwhile, the quality of life of postpartum mothers in the intervention group

was 71.638 ± 6.485 which means in the good category. There are significant differences in the quality of life in postpartum mothers both in the control group and the intervention group after the combination of yoga and pelvic floor training (p-value 0.000). The effect of the combination of postpartum yoga and pelvic floor training on the life quality of postpartum mothers before and after being given intervention.

Table 5 shows that the difference in life quality before and after the study both in the control and treatment groups (p-value <0.05). The results also showed that the mean value of the increase in life quality scores in the intervention group was greater than the control group. The mean improvement in quality of life in the control and treatment groups is a significant difference (p-value <0.05).

Life quality domain pre-post test

Table 6 shows that differences in life quality in the control and intervention groups before and after the study in each domain. In the 1st domain, namely the physical health domain, before the study, there was no significant difference between the two groups (p-value = 0.748) but after the study, there was a significant difference between the two groups (p-value = 0.000).

In the 2nd domain, the psychological well-being domain, before the study there was no significant difference between the two groups (p-value = 0.834) but after the study, there was a significant difference between the two groups (p-value = 0.000). In the 3rd domain, namely the social relationship domain, before the study, there was no significant difference between the two groups (p-value = 0.765) but after the study, there was a significant difference between the two groups (p-value = 0.000).

In the 4th domain, namely the environmental dimension domain, before the study, there was no significant difference between the two groups (p-value = 0.860) but after the study, there was a significant difference between the two groups (p-value = 0.000). In the 5th domain, namely the general healthiness domain, before the study, there was no significant difference between the two groups (p-value = 1.000) but after the study, there was a significant difference between the two groups (p-value = 0.000).

DISCUSSION

Life quality postpartum mothers before being given intervention

In this study, the life quality of postpartum mothers before the study in the control group was 52.250 ± 20.813 and in the intervention group was 53.500 ± 19.115 there was no significant difference before the study in both groups (p-value 0.812). The life quality of postpartum mothers before the study showed a moderate category.

The concept of quality of life refers to how a person views their place in life their objectives, values, and cultural standards, as well as to the environment in which they live. This is consistent with Gill & Feinstein's

definition of quality of life, which is a multi-faceted measurement that goes beyond medical or psychological interventions and encompasses an individual's perception of his or her position in life about the local culture and value system as well as his or her ideals, expectations, and views.

The quality of life is a multifaceted construct that can be divided into three main categories: demonstrating a multidimensional concept, which entails gathering data on the patient's functional ability, emotional or social well-being, and physical well-being, as well as evaluating the discrepancy between expectations and desires and the capacity to change oneself(7).

The quality of life of postpartum mothers in both groups tended to have scores close to the mean that were not significantly different, and these differences were not considered statistically significant. This can be inter-preted as meaning that in the early postpartum stage, factors that may affect the mother's quality of life, such as social support, physical and mental health, and the surrounding environment, do not seem to show a notable difference between the control and treatment groups. The results of this study illustrate that at this early stage, postpartum mothers from both groups feel a similar quality of life (8)(9).

According to research conducted by Chou et al. (2018) on 261 respondents of postpartum mothers explained that work, parity, age, partner support, marital status, and people living with women are predictors that positively interfere with the quality of life of postpartum mothers(10).

Life quality postpartum mothers after being given intervention

In this study, it was found that the life quality of postpartum mothers in the control group was 53.027 ± 8.016 which means in the moderate category. The life quality of postpartum mothers in the intervention group was 71.638 ± 6.485 which means in the good category. The results of statistical tests are significant differences in the life quality of postpartum mothers between the control and the intervention group after the combination of postpartum yoga and pelvic floor training (p-value 0.000).

The physical and emotional health of new mothers can benefit from postpartum yoga and pelvic floor training. After childbirth, physical activity can assist rebuild body strength and improve the pelvic muscles (11)(12). Yoga can also aid in lowering stress, encouraging relaxation, and elevating mood aspects that have a direct impact on one's quality of life.

This study's findings support the physical activity and well-being theory. According to this hypothesis, engaging in physical activity improves one's physical, mental, and emotional well-being as a whole (13). Physical activity is thought to reduce stress, improve physical fitness, and stimulate the release of mood-boosting endorphins(14).

The effect of the combination of post partum yoga and pelvic floor training on the life quality before and after being given intervention

In this study, both groups experienced an increase in quality of life before and after the study (p-value <0.05). However, the mean score of life quality improvement in the intervention group was significantly greater than the control group (p-value <0.05).

The pelvic floor is a set of muscles and ligaments that support the pelvic organs, including the bladder, uterus, and bowel. The pelvic muscles are frequently lax or weak after childbirth. Pelvic floor training is a useful tool for treating and preventing conditions like pelvic organ prolapse and urine incontinence because it tones and strengthens the pelvic muscles. This strengthening of the pelvic muscles might give new mothers a sense of self-assurance and physical comfort(15)(16).

Pelvic floor exercises can have a positive effect on a mother's postpartum life quality by improving pelvic floor muscle strength and reducing the risk of problems of urinary incontinence and pelvic organ prolapse (17). Pelvic floor muscles can become weak or damaged during labor, and pelvic floor exercises aim to strengthen these muscles through exercises that target the pelvic floor. Postpartum women can benefit from better bladder control, a lower chance of pelvic organ prolapse, and enhanced sexual function by strengthening their pelvic floor muscles(18). In addition, postpartum women can do daily tasks more effectively without risk of incontinence or other pelvic floor-related difficulties when their pelvic floor muscles are strengthened. This can enhance physical performance and overall quality of life. In general, pelvic floor exercises are a crucial intervention to enhance postpartum women's quality of life and lower their risk of pelvic floor-related issues(19)(20).

Postpartum yoga involves breathing exercises, gentle movements, and meditation that can help reduce stress levels and promote relaxation. Postpartum stress is common, and yoga practice can help reduce feelings of anxiety, promote a sense of calm, and improve mood. By reducing stress and anxiety, mothers can feel better emotionally and mentally, positively impacting their life quality(21).

Postpartum yoga and pelvic floor training are complementary therapies that can aid mothers in regaining their physical fitness following childbirth. These exercises can strengthen the body's general muscles, promote flexibility, and enhance blood circulation. Mothers are better able to handle everyday responsibilities, such as taking care of their infants, when they feel fitter and more energized(22).

Mothers can feel more connected to the postpartum recovery process and get a greater awareness of their bodies by combining postpartum yoga with pelvic floor training. This can let mothers feel better about the physical changes their bodies go through after giving birth. Moreover, mothers' confidence and self-image can benefit from

increased bodily awareness. Pranayama breathing motions, commonly referred to as deep breathing and utilized in all yoga practices, are the pathophysiology of yoga practice on anxiety. Breathing deeply and slowly stimulates the parasympathetic nervous system, which affects lung tissue stretching and the vagal nerve. Positive relationships have also been demonstrated between Asana (Yoga Postures) motions and elevated brain levels of GABA, which improve mood and lower anxiety. Factors that play an important role in reducing anxiety during meditation are increased parasympathetic nerve activity, GABA levels, and serotonin, in addition to reducing the levels of the locus cerolus with a decrease in noradrenaline hormones and decreasing cortisol hormones (23).

Thus, postpartum yoga and pelvic floor training provide comprehensive support for postpartum mothers, help them feel better physically and emotionally, and improve the quality of life of postpartum mothers. The results of this study are in line with Nabilla (2021), which reveals that there is a positive impact of yoga practice on anxiety during pregnancy and postpartum depression (24).

Life quality domain before and after intervention

In this study, the 1st domain is physical healthiness, before being given intervention was no significant difference between the two groups (p-value = 0.748) but after the study, there was a significant difference between the two groups (p-value = 0.000). The physical health dimension, which refers to symptoms related to disease and treatment, can affect an individual's ability to carry out activities. Activities carried out by individuals will provide new experiences which are capital for development to the next stage.

The benefits of postpartum yoga and pelvic floor training improve physical health by reducing symptoms of urinary and defecation incontinence, lower pelvic pain, and pelvic organ prolapse. These symptoms may impair the life quality by causing discomfort, illness, offensive odors, skin irritation, and sleep disruptions (Nurbi, 2021). In the meanwhile, yoga can enhance psychological well-being by mitigating the stress, worry, despair, shame, low self-esteem, and social isolation linked to incontinence in the urine and feces. These symptoms may have an impact on motivation, mood, focus, and overall quality of life (25).

In this study, the 2nd domain 2 is psychological well-being, before being given intervention was no significant difference between the two groups (p-value = 0.834) but after the study, there was a significant difference (p-value = 0.000). The psychological dimension pertains to an individual's mental state. Individuals' mental states determine their ability to adapt to different developmental challenges, both internal and external, by their talents. A person's ability to execute an activity properly depends on their mental health; psychological and physical components are related (22).

Enhances sexual health by lessening pain during sexual activity and augmenting orgasmic pleasures that may be compromised by pelvic floor muscular weakness or incontinence to the urine and defecation. Reproduction, psychological well-being, self-confidence, and marriage harmony can all be impacted by sexual health (26).

In the 3rd domain is the social relationship, before being given intervention was no significant difference between the two groups (p-value = 0.765) but after the study, there was a significant difference (p-value = 0.000). Social relationships constitute the third domain. In these relationships, there are two or more people whose activity affects, modifies, or enhances the behavior of the others. Pelvic floor training can improve social health by increasing participation in social activities, recreation, sports, work, and travel that may be limited by urinary and defecation incontinence (27). These pursuits can offer chances for social interaction, enjoyment, education, growth, and societal contribution (28).

In the 4th domain which is the environmental dimension domain, before being given intervention was no significant difference between the two groups (p-value = 0.860) but after the study, there was a significant difference (p-value = 0.000). The environment, or the location where people live, comprises the circumstances, the availability of a place to live where one can perform all activities of daily life, as well as recommendations and infrastructure that can sustain life. The way pelvic floor training is implemented can also be influenced by the actual surroundings. pelvic floor training can be easier for mothers to complete if they have easy access to the facilities or instructions needed to perform this activity (23).

In the 5th domain which is the general healthiness domain, before being given intervention was no significant difference between the two groups (p-value = 1,000) but after the study, there was a significant difference (p-value=0,000). The general quality of life and contentment with one's health are linked to the general health dimension. Postpartum yoga helps increase the range of motion and flexibility. This is crucial for enhancing everyday mobility and avoiding muscle and joint stiffness (29). Increased comfort in daily activities and a lower chance of injury are two other benefits of improved flexibility (30). Postpartum yoga and pelvic floor training both incorporate breathing and relaxation exercises. By producing more feel-good hormones and lowering stress hormone levels, these exercises can aid. Mothers can feel more at ease and have better mental health by lowering their levels of stress and anxiety (25) (28).

CONCLUSION AND RECOMMENDATIONS

Based on the results, there is an increase in the life quality of the intervention group compared to the control group which is significantly different after being given a combination of postpartum yoga and pelvic

floor training (p-value <0.05). To improve outcomes, academic recommendations call for larger sample sizes in future research. Practical recommendations advise health-care facilities to treat postpartum moms by combining pelvic floor training with yoga to enhance their quality of life.

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