ORIGINAL ARTICLE

THE EFFECTIVENESS OF POSTPARTUM YOGA ON UTERINE INVOLUTION AMONG POSTPARTUM WOMEN IN INDONESIA

Ni Putu Dian Ayu Anggraeni[1,3*], Lucky Herawati[2], Melyana Nurul Widyawati[1]

1. **Poltekkes Kemenkes Semarang, Indonesia**
2. **Poltekkes Kemenkes Yogyakarta, Indonesia**
3. **Poltekkes Kemenkes Mataram, Indonesia**

* **Correspodence: niputudianayu@gmail.com**

Abstract

Sub uterine involution is one of the pathological symptoms of the postpartum period, which causes complications. This is indicated by the size of the fundus uterine, which is greater than the normal size and elongated outflow of lochia. One of the non-pharmacological methods for preventing sub uterine involution is postpartum yoga which focuses on physical and breathing exercises, strengthening of the pelvic floor muscles, and relaxation of auto suggestions. The study aimed to analyze the effectiveness of postpartum yoga on uterine involution. A quasi-experimental, pre-test and post-test with the control group was applied in this study. Thirty-eight postpartum women received postpartum yoga as the intervention group. The control group was comprised of 19 women. Respondents in the intervention group received postpartum yoga while the control group received general postpartum exercise. The Mann Whitney test analyzes differences in uterine involution. The gain score of uterine involution in the intervention group was 9.14 ± 1.27 and in the control group 7.20 ± 1.11. The Cohen's effect size test is 1.63. The result of the mann whitney test showed that there was a significant difference between the intervention group and the control group with p value 0,000. The result of determination (R Square), postpartum yoga had an effect of 40.3% on uterine involution after being controlled simultaneously with parity, frequency of breastfeeding, and anxiety. Postpartum yoga is effective to strengthen the uterine muscles, facilitate blood circulation, and stimulate neurohormonal so it could accelerate uterine involution. Further studies could measure of fundus uterine daily. Future researchers can develop postpartum yoga research with other variables such as anxiety, urinary incontinence, quality of life for postpartum women, and hormonal variables including oxytocin, endorphins, and cortisol.

Keywords: postpartum yoga, postpartum period, postpartum exercise, uterine involution

International Journal of Nursing and Health Services (IJNHS), September 2019, Volume 2, Issue 3; Page 124-134
Received: 02 July 2019; Revised: 18 July 2019; Accepted: 28 July 2019
DOI: http//doi.org/10.35654/ijnhs.v2i3.164

1. Introduction

Postpartum hemorrhage (PPH) is the leading cause of maternal morbidity and mortality worldwide which occurs up to 10% of all deliveries (1). PPH is characterized by blood loss during the puerperium (≥ 500 cc) with symptoms of hypovolemic within 24 hours after cesarean delivery or vaginal birth (1-2). Maternal deaths due to PPH occur in more than half of mothers after childbirth, with a duration of death every 4 minutes or an estimated 140,000 maternal deaths worldwide every year, most of them are unknown to previous risk factors (3). The risks of postpartum hemorrhage can occur 45% in 24 first hours of labor and 68-73% occur within 1 week of labor. This is caused by infection, the remaining placenta is left behind, or because the process of womb reduction is not good called sub uterine involution (4-5). Sub uterine involution is one of the pathological symptoms of the postpartum period which causes complications characterized by the size of the fundus uterine larger than normal size and lochia's expenditure extends (6). The highest cause of postpartum bleeding is 50-60% due to inadequate uterine contractions (4).

Several studies have been conducted about uterine involution including oxytocin massage, endorphin massage, back massage, and postpartum exercise and the results of these studies are significant (7–11), but the current prevalence of postpartum hemorrhage remains high (12). A study by Arrizqiyani (2017) showed that postpartum exercise was more effective in accelerating uterine involution than oxytocin massage with p value 0.001 (13) In contrast, Azizah (2018) found that the uterine involution process was faster in the back massage group using clary sage essential oil (salvia sclera) than the postpartum exercise group (7). Some studies recommended to develop further research on uterine involution such as controlling psychological factors that influence the physical condition and psychology among postpartum mothers (7-8,10-11).

Bershadsky et al. (2014) showed that yoga had to have a positive effect during pregnancy and potentially reduced symptoms of postpartum depression among women in South Carolina. Yoga is recommended for postpartum mothers to improve physical well-being and postpartum psychology (14). Yoga is a holistic approach that focuses on the interconnection of body, mind, and spirit. It combines physical poses (asanas), breathing techniques (breathing), meditation, and relaxation that restores self-balance with nature and neutralize physical, emotional, and mental discomfort. Postpartum yoga is a special program for postpartum mothers with techniques and intensities that have been adapted to the circumstances and the physical and psychological needs of the mothers. Postpartum yoga focuses on physical and breathing exercises, strengthening of the pelvic floor muscles, and relaxation of automatic suggestions.

2. Objectives

The study aimed to analyze the effectiveness of postpartum yoga on uterine involution.

3. Methods

3.1. Research Design

A quasi-experimental with non-equivalent control group pre-test and post-test design was used in this study.

3.2. Setting, Samples And Sampling Technique

This study was conducted in the community health center in Semarang from January to May 2019. The sample in this study was normal vaginal birth after 6 hours postpartum. We recruited 38 samples and 19 samples were allocated in the experimental group and in the control group, respectively. The inclusion criteria in this study was normal postpartum mothers who were willing to become a respondent, in good health & had no complications, reproductive age, primiparous and multiparous (the number of children 1-3), term pregnancies, early initiation of breastfeeding and good maternal nutritional status. This study was divided into two groups. The first group received postpartum yoga intervention; the second group received general postpartum exercise, each given 30 minutes per day for 7 days of treatment.

3.3. Instrument

The research instruments was utilized in this study including: 1) Observation sheet containing data about the date of research, code of respondent, parity, education, frequency of breastfeeding, observation sheet of uterine involution; 2) An anxiety measurement using the Postpartum Specific Anxiety Scale (PSAS) questionnaire; 3) Fundal height measurement using a tape measure with standardized protocol for uterine involution; 4) Postpartum Yoga Guidelines that have been validated by three experts and Standard Operational Procedures for General Postpartum Exercise.

3.4. Ethical Consideration

The study was conducted after approval had been obtained from Health Research Ethics Commission of the Faculty of Dentistry Sultan Agung Islamic University Semarang Number 061 / B.1-KEPK / SA-FKG / IV / 2019.

3.5. Data Analysis

Data analysis utilized SPSS 22.0 software program. Descriptive analysis was used to describe the characteristics of each variable in the percentage of parity and education, as well as the mean and standard deviation of the frequency of breastfeeding and anxiety. Test the normality of the data as a monitor of bivariate parameters used the Shapiro Wilk test. Analyzing gain scores in uterine involution of the pretest and posttest between the intervention groups was compared with the control group using the Mann Whitney test. Ancova was carried out to determine the effect of intervention on uterine involution in the intervention group after parity, education, and anxiety were controlled.

4. Results

The results of this study were presented as below :

4.1. Respondent characteristics

Table 4.1. Distribution of Characteristics of Respondents Based on Parity, Education, Frequency of Breastfeeding, and Anxiety

Characteristics of Respondents		Group						*p value*[a]	*p value*[b]
		Intervention		Control		Total			
		N	%	n	%	n	%		
Parity	Parity 1 (primiparous)	7	36,8	6	34,2	13	34,2	0.937*	
	Parity 2 (multiparous)	9	47,4	10	52,6	19	50,0		
	Parity 3 (multiparous)	3	15,8	3	15,8	6	15,8		
	Total	19		19		38	100		
Education	Basic (SD-SMP)	5	26,3	6	31,6	11	28,9	0.890*	
	Secondary (SMA/SMK)	10	52,6	10	52,6	20	52,6		
	High (College)	4	21,1	3	15,8	7	18,4		
	Total	19		19		38	100		
Frequency of Breastfeeding	Mean ± SD	6,32 ± 11,42		6,26 ± 11,21					0.490*
Anxiety	Mean ± SD	77,16 ± 14,56		76,47 ± 12,97					0.460*

[a]*Chi square* [b]*Lavene test*

**Level significance >0,05*

Based on Table 4.1, the characteristics of respondents based on parity showed that most of respondents in the intervention group and control group were multiparous with the number of children 2 as many as 19 respondents (50%), primiparous with the number of children 1 as many as 13 respondents (34.2%), and 6 respondents (15, 8%) multiparous with the number of children 3. The Chi-Square test results showed that the two groups had homogeneous variants/ equivalent with p value 0.937 (p> 0.05).

The characteristics of respondents based on education level were mostly secondary education (high school) 20 (52.6%), basic education 11 (28.9%), and 7 (18.4%) respondents were highly educated. The proportion of the education level of the respondents in the two groups was homogeneous / equivalent to p value 0.890 (p> 0.05).

The mean of frequency of breastfeeding in the intervention group before treatment was 6.32 (SD ± 11.42) and the control group was 6.26 (SD ± 11.21). The results of statistical tests showed that the two groups also had homogeneous variants / equivalent with p value 0.490 (p> 0.05).

While the anxiety characteristics reviewed from the PSAS (Postpartum Specific Anxiety Scale) questionnaire were obtained, the average score of anxiety in the intervention group was 77.16 (SD ± 14.56) and the control group was 76.47 ± 12.97. The results of statistical tests showed that the two groups had homogeneous variants / equivalent with p value 0.460 (p> 0.05).

So, it can be concluded that the characteristics of the respondents in this study such as parity, education, frequency of breastfeeding, and anxiety were successfully controlled to ensure that the results of the study were not influenced by the characteristics of the respondents.

4.2. Dependent Variable Descriptive Analysis

Table 4.2. Results of Dependent Variable Descriptive Analysis in the Intervention and Control Groups

Variable	Group		Mean ± SD	Min-Max	*p value*
Uterine Involution	Intervention	*Pre test*	14,05 ± 1,18	12,0 – 16,2	0,413*
	Control		13,86 ± 1,01	11,5 – 15,3	
	Intervention	*Post test*	4.90 ± 1.12	3,0 – 7,1	0,896*
	Control		6.66 ± 1,09	4,5 – 8,0	

[a]*Lavene test*

**Level significance >0,05*

Table 4.2 showed the mean value of uterine involution in the intervention group and the homogeneous / equivalent control group.

4.3. Data Normality Test (Shapiro-Wilk)

Table 4.3. Data Normality Test (Shapiro-Wilk) in the Intervention and Control Groups

Variable	Group		df	*p value*
Uterine Involution	Intervention	*Pre test*	19	0,926*
		Post test	19	0,097*
	Control	*Pre test*	19	0,812*
		Post test	19	0,274*
	Intervention	*Gain score*	19	0,500*
	Control	*Gain score*	19	0,027

**Level significance >0,05*

Table 4.3 showed the results of the normality test of the data using the Shapiro-Wilk Test (sample <50) obtained the results of the average value of uterine involution distributed normally in each group so that the analysis used parametric

analysis. While the gain score uterine involution used non parametric analysis because the data was not normally distributed.

4.4. Differences in Uterine Involution Before and After Treatment in the Intervention and Control Groups

Table 4.4. Differences in Uterine Involution Before and After Treatment in the Intervention and Control Groups

Group		Mean±SD	*p value*[a]
Intervention	*Pre test*	14,05 ± 1,18	0,000*
	Post test	4.90 ± 1,12	
Control	*Pre test*	13,86 ± 1,01	0,000*
	Post test	6.66 ± 1,09	

[a]*Paired t-test*
**Level significance <0,05*

Table 4.4 showed the mean reduction fundus uterine as an indicator of uterine involution before treatment in the postpartum yoga group was 14.05 (SD ± 1.18) and decreased to 4.90 (SD ± 1.12). The results of the paired t-test statistical test showed that there was a significant difference in uterine involution before and after the postpartum yoga treatment with p value 0,000 (p <0.05). Whereas the average fundus uterine of respondents in the postpartum exercise group before treatment experienced a decline 13.86 (SD ± 1.01), and after receiving postpartum exercise treatment ie 6.66 (SD ± 1.09). The results of the paired t-test statistical test showed that there was a significant difference in uterine involution before and after receiving postpartum exercise treatment with a p value of 0,000 (p <0.05).

The intervention group and the control group were proven to decrease fundus uterine as an indicator of uterine involution in postpartum mothers

4.5. Gain Score Difference (Δ) Uteri Involution between Intervention Group and Control Group

Table 4.5. Gain Score Difference (Δ) Uteri Involution between Intervention Group and Control Group

Group		Mean±SD	*p value*[a]
Intervention	*Gain score*	-9,14±1,27	0,000*
Control	*Gain score*	-7,20±1,11	

[a]*Mann Whitney*
**Level significance <0,05*

Table 4.5 showed that based on the mann-whitney non parametric statistical test, the results showed that there was a significant difference in the mean of uterine involution between the intervention group and the control group

with a p-value of 0,000 <0.05. The average difference in uterine involution before and after treatment (gain score) in the intervention group was higher at -9.14 cm compared to the control group at -7.20 cm. So it was concluded that the gain score of uterine involution was greater in the intervention group than the control group.

The results of the Cohen effect size test in two independent variable samples (postpartum yoga and postpartum exercise) obtained results of 1.63 (Cohen's d> 0.8) means that postpartum yoga is very effective in accelerating uterine involution in postpartum mothers.

Covariance analysis was utilized to balance the effectiveness of variables that do not interact relatively more strongly and aim to balance the influence of interactions between variables in the study.

4.6. Gain Score Difference (Δ) Uterine Involvement between Intervention Groups and Control Groups After Controlling Parity, Frequency of Breastfeeding, and Anxiety

Table 4.6. Gain Score Difference (Δ) Uterine Involvement between Intervention Groups and Control Groups After Controlling Parity, Frequency of Breastfeeding, and Anxiety

Model		*p value*[a]	R	R Square
Uterine Involution	Group	0,000*	0,468	0,403
	Parity	0,985		
	Frequency of Breastfeeding	0,092		
	Anxiety	0,489		

[a]*Ancova test*

** Level of significance* α<0.05

Table 6 showed the gain score of uterine involution between the intervention group and the control group after controlling for parity, frequency of breastfeeding, and persistent anxiety. It had a significant simultaneous effect with p value 0,000 (p <0.05).

The results of determination (R Square) of postpartum yoga group after being controlled simultaneously with parity, frequency of breastfeeding, and anxiety had an effect of 0.403 or 40.3% on uterine involution while the remaining 59.7% was influenced by other factors not examined in this study.

5. Discussion

In this study, postpartum yoga is proven as an effective tool to accelerate uterine involution in the postpartum period with a measure of effect of 1.63. There was a significant difference in the average gain score of uterine involution between postpartum yoga groups and the postpartum exercise group with p value 0,000. Postpartum muscle stretching influences the reduction of the uterine muscle after birth. The decrease of muscle elasticity can affect uterine contractions, therefore, it affects the

return process of uterine devices like before pregnancy (15). Uterine contractions are influenced by the release of the hormone oxytocin. This hormone will continue to be produced by the pituitary as long as stimulation is still ongoing (16). The frequency of uterine contractions and the duration of uterine involution of each mother do not occur specifically on a daily basis and vary greatly. The cervix and uterus experience a process of return like before pregnancy (17).

The process of returning reproductive organs is abnormal. One of them is caused by the quality of the mother's sleep disturbed by fatigue and muscle tension. This can be prevented by yoga-based physical exercise. It was proven from previous researches that the saliva level of α-amylase decreased significantly and immediately after practicing yoga during all evaluation periods in yoga groups. The duration of night time sleep was significantly longer in the yoga group (18). Yoga postures help stretching and building muscle, and strengthening bones and relaxing the joints. Yoga and relaxation postures stimulate the secretion of the hormone endorphin (a happy hormone) which creates a comfortable feeling for the body. Additionally, breathing with yoga breathing techniques can increase lung capacity so that the breathing process becomes more optimal.

This is in line with a study by Zourdalani (2015) that found the implementation of low-intensity physical exercise programs seems to improve physical and overall fitness in postpartum women, including increased cardio-respiratory function, muscle strength, and endurance of the upper and abdominal limbs, stretching the musculoskeletal back and thighs, and a reduction in total body fat. Physiologically, muscle resistance is known to decrease after childbirth along with hormonal changes that occur (19-20). With the presence of physical exercise, especially yoga can improve muscle strength, stretching, and relaxation so that the quality of postpartum life is increased (21-22).

In line with previous studies that postpartum women who received postnatal physical training immediately after giving birth were proven to have better physical well-being and improved quality of life (23). Exercise leads to increased levels of endorphins in the brain which acts as internal psychoactive agents to produce a sense of euphoria, a pleasant feeling associated with a positive self-image, a sense of vitality, control, and satisfaction, beta-endorphins produced endogenously from in the body during exercise (24). Yoga-based physical exercise as a holistic behavior has proven to be effective in improving psychological well-being, helping to build a recovery of physical strength after childbirth, and providing social support to postpartum mothers (21,25).

In accordance with this study, postpartum yoga starts from the first day (> 6 hours) after the mother gives birth with a pose that is tailored to the needs of the mother can improve sleep quality, increase pelvic floor muscle strengthening, and provide relaxation, body and mind for the women. The postpartum yoga movement in this study focused on attention on breathing rhythms, emphasis on modified pelvic tilt poses, crocodile modification, bridge poses, and child poses that prioritize comfort, hence, it can reduce muscle tension, facilitate blood circulation, and stimulate neuro hormonal and physical for the reduction discomfort physic and psychological in women. The comfortable condition of women can stimulate the nerve center in the hypothalamus in the brain and cause neurohipofise cells (posterior pituitary) to release

oxytocin secreted by neuron cells in the periventricular and supraoptic nuclei of the hypothalamus. Oxytocin flows through nerve fibers to the posterior pituitary and releases into the bloodstream when the nerves are stimulated. Through the bloodstream, these hormones are transported to the alveoli and affect myoepithelium cells to contract and the process of uterine involution is faster. So that it can be concluded, postpartum yoga is effective in accelerating uterine involution.

6. Limitation

The evaluation of uterus involution is limited to 2 measurements (pre- and post-treatment), hence, the day when the uterus returns to its normal size are undetectable.

7. Conclusion

Postpartum yoga is effective on uterine involution as its movements focus on breath rhythm, emphasis on modified pelvic tilt poses, crocodile modifications, bridge poses, and child poses that help to reduce muscle tension, facilitate blood circulation, and stimulate an increase in neuron-hormonal so it could increase women's comfort and effectively accelerate uterine involution.

8. Recommendation

Midwives or health workers to prevent postpartum bleeding can apply postpartum yoga as a treatment program. Further research should address the measurement of fundus uterine daily after treatment and the addition of the number of samples. Future researchers can develop research related to postpartum yoga by adding other variables related to the recovery of the postpartum period, such as anxiety, urinary incontinence, and the quality of life of postpartum women with the same criteria. In addition, hormonal variables such as oxytocin, endorphins and cortisol may be added in the future research.

References

1. Andrikopoulou M, Alton MED. Postpartum hemorrhage is the leading cause of maternal US CR. Semin Perinatol [Internet]. 2018; Available from: https://doi.org/10.1053/j.semperi.2018.11.003
2. Pickering K, Gallos ID, Williams H, Price MJ, Merriel A, Lissauer D, et al. Uterotonic Drugs for the Prevention of Postpartum Haemorrhage: A Cost-Effectiveness Analysis. PharmacoEconomics-open. 2018;1–14.
3. Chua SC, Treadwell EL, Gidaszewski B, Gibbs E, Kirby A, Khajehei M. Validation of the accuracy of postpartum haemorrhage data in the ObstetriX database: A retrospective cohort study. Int J Med Inform. 2018;120:42–9.
4. Rofi'ah S, Yuniyanti B, Isworo A. Faktor–faktor yang berhubungan dengan Penurunan Tinggi Fundus Uteri pada Ibu Nifas 6 jam Post Partum. J Ris Kesehat. 2015;4(2):734–42.
5. Sarwono P. Ilmu Kandungan Edisi Tiga. Jakarta PT Bina Pustaka Sarwono Prawirohardjo. 2011;
6. Harianja WY, Setiani O, Umaroh, Widyawati MN, Imam Djamaludin Mashoedi SEP. The

Impact Of Pineapple (Ananas Comosus (L .) Merr .) Juice On Fundal Height In Primigravida Mothers. Belitung Nursing Journal [Internet]. 2017;3(2):134–41. Available from: http://belitungraya.org/BRP/index.php/bnj/
7. Azizah N, Rosydah R, Mahfudloh H. The Comparison of The Effectiveness Back Massage with Clary Sage Essential Oil and Postpartum Exercise for Post Partum Uterus Involution. J Phys Conf Ser 1114 012009. 2018;
8. Nurmala Sari, Soejoenoes A, Wahyuni1 S, Setiani O, Anwar C. The Effectiveness Of Combination Of Oxytocin And Endorphin Massage On Uterine Involution In Primiparous Mothers. Belitung Nurs J. 2017;3(5):569–76.
9. Ineke SH, Ani M, Sumarni S. Pengaruh Senam Nifas Terhadap Tinggi Fundus Uteri dan Jenis Lochea Pada Primipara. J Ilm Bidan. 2016;1(3):45–54.
10. Anggarini IA, Hakimi M, Hidayat A. Pengaruh Senam Nifas Terhadap Perubahan Maternal Depressive Symptoms Di Rumah Sakit Ibu Dan Anak (Rsia) Sakina Idaman Kabupaten Sleman. Masker Med. 2018;6(1):67–76.
11. Lanasari NM, Rahayu S, Panggayuh A. Pengaruh Pijat Endorphin Terhadap Percepatan Involusio Uteri Pada Ibu Nifas. J Ilm Bidan. 2018;III(1):15–20.
12. WHO, UNICEF, UNFPA WBG and the UNPD. Trends in Maternal Mortality : 1990 to 2015. Exec Summ WHO Libr Cat. 2015;
13. Arrizqiyani T. Perbedaan Pijat Oksitosin Dan Senam Nifas Terhadap Involusi Uterus Pada Ibu Nifas Di Wilayah Kerja Puskesmas Cibeureum Kota Tasikmalaya 2017 The Difference Between Of Oxytocin Massage. Jurnal Kesehatan Bakti Tunas Husada. 2017;17(2):304–13.
14. Bershadsky S, Trumpfheller L, Kimble HB, Pipaloff D, Yim IS. The effect of prenatal Hatha yoga on affect, cortisol and depressive symptoms. Complement Ther Clin Pract [Internet]. 2014;20(2):106–13. Available from : http://dx.doi.org/10.1016/j.ctcp.2014.01.002
15. Situngkir R. Pengaruh Senam Nifas Terhadap Involusi Uteri Pada Ibu Nifas Di rumah Sakit Khusus Daerah Ibu Dan Anak Siti Fatimah Makassar. Jurnal Keperawatan Stik Stella Maris Makassar. 2017;2(2):15–24.
16. Astuti S, Jusdistiani TD, Rahmiati L, Susanti AI. Asuhan Kebidanan Nifas & Menyusui. Rina Astikawati, editor. Jakarta : Penerbit Erlangga; 2015. 14-15 p.
17. Fraser DM, Margaret A. Myles Textbook for Midwives. Myles textbook for midwives. Edisi 14. Jakarta : EGC: EGC; 2009.
18. Hayase M, Shimada M. Effects of maternity yoga on the autonomic nervous system during pregnancy. J Obstet Gynaecol Res. 2018;1–9.
19. Larson-Meyer DE. Effect of postpartum exercise on mothers and their offspring: a review of the literature. Obes Res. 2002;10(8):841–53.
20. Zourladani A, Zafrakas M, Chatzigiannis B, Papasozomenou P, Vavilis D, Matziari C. The effect of physical exercise on postpartum fitness , hormone and lipid levels : a randomized controlled trial in primiparous , lactating women. Matern Med. 2015;525–30.
21. Timlin D, Simpson EEA. A preliminary randomised control trial of the effects of Dru yoga on psychological well-being in Northern Irish first time mothers. Midwifery. 2017;46:29–36.
22. Sun Z, Zhu L, Lang J, Zhang Y, Liu G, Chen X, et al. [Postpartum pelvic floor rehabilitation on prevention of female pelvic floor dysfunction: a multicenter

prospective randomized controlled study]. Zhonghua Fu Chan Ke Za Zhi. 2015 Jun;50(6):420–7.
23. Mahishale A V, Ulorica LPAM, Patil HS. Effect of postnatal exercises on quality of life in immediate postpartum mothers: A clinical trial. J SAFOG [Internet]. 2014;6(1):11–4. Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983778765&doi=10.5005%2Fjp-journals-10006-1258&partnerID=40&md5=dafb532995766e55c38aa1c76be9dfb1
24. Szabo A, Griffiths MD, Demetrovics Z. Psychology and Exercise [Internet]. Second Edition. Nutrition and Enhanced Sports Performance. Elsevier Inc.; 2019. 63-72 p. Available from: https://doi.org/10.1016/B978-0-12-813922-6.00005-9
25. Buttner MM, Brock RL, O'Hara MW, Stuart S. Efficacy of yoga for depressed postpartum women: a randomized controlled trial. Complement Ther Clin Pract. 2015;21(2):94–100.