Jurnal Aisyah: Jurnal Ilmu Kesehatan

Volume 6, Issue 3, September 2021, p. 483–488
ISSN 2502-4825 (print), ISSN 2502-9495 (online)

Comparison on the Effectiveness of Postpartum Exercise and Oxytocin Massage for Uterine Involution of Postpartum Women in Kebumen, Indonesia

Kusumastuti[1*)]; Siti Mutoharoh[2]; Wulan Rahmadhani[3]

[1*),2,3]Depament of Midwifery, Universitas Muhammadiyah Gombong

ARTICLE INFO

Article history:

Received 21 June 2021
Accepted 21 August 2021
Published 25 September 2021

Keyword:

Postpartum
Oxytocin massage
Postpartum exercise
Uterine involution

A B S T R A C T

Maternal mortality rates are caused by several factors, including bleeding. During postpartum, bleeding can be caused by a failure of uterine involution which can cause subinvolution. Oxytocin plays an important role in the uterine involution process. This study aims to compare the effectiveness of postpartum exercise and oxytocin massage for the uterine involution of postpartum women in the Kebumen. This study applied a quasi-experimental design for comparing two treatments. It involved a total of 534 respondents with 267 respondents in each group. Each group received 10 minutes of intervention per day for 9 days. The data were collected through observation sheets. The univariate analysis used frequency distribution and bivariate analysis used an independent t-test. The statistics show that the p-value (0.002) was lower than (0.05) meaning that the postpartum exercise and oxytocin massage provide different uterine involution times. The mean of uterine involution for the postpartum exercise group decreases by 137.60 hours compared to the oxytocin massage group by 159.06 hours. Postpartum exercise can be applied in post-natal care as it can make uterine involution faster.

Kata kunci:

Postpartum
Pijat oksitosin
Senam nifas
Involusi uteri

**) corresponding author*

Depament of Midwifery, Universitas Muhammadiyah Gombong

Email: ncuz.kusuma26@gmail.com

DOI: 10.30604/jika.v6i3.647

A B S T R A K

Kematian ibu di sebabkan beberapa factor termasuk perdarahan. Selama postpartum perdarahan di sebabkan oleh kegagalan involusi uterus yang di sebabkan oleh subinvolusi. Oxitosin memaikan peran yang sangat penting dalam proses involusi uteri. Penelitian ini bertujuan adalah untuk membandingkan efektifitas dari senam nifas dan pijat oksitosin terhadap proses involusi uteri paa ibu postpartum di wilayah kerja Kebumen. Metode quasi experiment di gunakan dalam penelitian ini dengan membandingkan dua treatment. Sampel pada penelitian ini berjumlah 534 dengan masing-masing 267 respondent pada masing-masing kelompok. Analisis univariate menggunakan distribusi frekuensi dan analisis bivariate menggunakan independent t-test. Hasil pada penelitian ini di temukan bahwa p-value (0.002) <0.05 yang mana terddapat perbedaan antara senam nifas dan pijat oksitosin terhadap perubahan involusi uteri. Mean dari involusi uteri pada grup senam nidas menurun menjadi 137.60 jam di banding dengan pijat oksitosin grup dengan 159.06 jam. Senam nifas bisa di jadikan atau di aplikasikan dalam perawatan pascapersalinan karena dar hasil dapat membuat dan membantu involusi uteri lebih cepat pada ibu nifas.

INTRODUCTION

The postpartum period begins upon delivery of the infant up to the reproductive organs get normal (Rahmadhani & Laohasiriwong, 2020). It is in line with research who stated that the postpartum period lasts for six weeks started from the delivery of the infant till the reproductive organs return to normal(Rahmadhani, 2020). During the postpartum period, women will experience many changes both physically and psychologically(Lemes et al., 2017). The changes occur to the entire system, including the reproductive system(Vas et al., 2019). Both anatomic and physiological changes occur during this period as the processes that occur during pregnancy are restored (Radoff et al., 2013)

The Ministry of Health data show that the number of postpartum women in Indonesia reached 4,975,636(Kemenkes RI, 2018). Based on the Indonesia Demographic Health Survey (SDKI) data in 2017, the maternal mortality rate (MMR) in this country reached 359 per 100,000 live births(SDKI, 2017). Furthermore, the regional report submitted to the Ministry of Health showed that the number of maternal death due to pregnancy and birth delivery was 5019 in 2013(Kemenkes RI, 2013). The Ministry of Health includes three main factors causing maternal death, namely bleeding (28%), eclampsia (24%), and infection (11%)(Kemenkes RI, 2018). The most common cause of bleeding after delivery was the weak condition or absence of uterine contractions (50% -60%)(Kemenkes RI, 2017).

Uterine involution is returned of the uterus to condition before pregnancy in form position(Kyathanahalli et al., 2013). Involution could shrink the uterys after delivery to returned to original shape weight about 60 grams(Colin et al., 2019). This process starts after placenta born due to muscle contraction uterine plain(Falomo et al., 2020). Many factors could affected the process of uterine involution, including breastfeeding, early mobilization, nutrition status, parity and age(Lemes et al., 2017). Failure of uterine involution is called sub involution(Kyathanahalli et al., 2013). Subinvolution is often caused by infection and retained placenta in uterus, made uterus involution process does not running normally and hampered(Asyima et al., 2019).

Non pharmacological actions are postpartum exercise and oxytocin massage (Anggarini, 2020). Postpartum exercise is one of action could reduce the problems that occurred to the mother postpartum(Aziz, 2018). Oxytcin massage and postpartum exercise help uterine involution is a process that vey urgent, with the process it is expected postpartum mothers are faster in process decrease in uterine fundus height and return of the uterus and prevent uterine sub involution(Susanti & Putri, 2019).

METHOD

This study is a quasi-experiment using post-test only design with two comparison treatments or interventions. The design aims to compare the results of treatment, treatment A for group A and treatment B for group B. In this design, each group received different treatments (Burns & Grove, 2005). The intervention was for 10 minutes each day until no uterine fundus palpation. The intervention was started in the first 24 hours after birth. The uterine involution time was measured after there is no uterine fundus palpation in the abdomen.

Before starting the data collection, researchers distributed informed consent to each respondent. The respondents were required to sign informed consent if they are willing to participate in this study. The total sample of 534 postpartum women who met the inclusion criteria in the coverage areas of Puskesmas in Kebumen District selected using a purposive sampling technique. The respondents were grouped into two with 267 respondents of each. This study used univariate analysis to illustrate the characteristics and demographics of respondents in percentage. Then, bivariate analysis was to compare the uterine involution time between the intervention of postpartum exercise and oxytocin massage using an independent t-test.

RESULTS

Table 1
Characteristics of Respondents

Characteristics	Postpartum Exercise (n=267)		Oxytocin massage (n=267)		Total (n=534)		p-value
	N	%	N	%	n	%	
Age							1.000
20-35	235	88.2	251	94.1	486	91.2	
>35	32	11.8	16	5.9	48	8.8	
Parties							0.485
Multipara	267	100	237	88.2	504	94.1	
Grande multipara	0	100	30	11.2	30	5.9	
Education							1.000
Primary School	32	11.8	62	23.5	94	17.6	
Junior High School	46	17.6	32	11.8	78	14.7	
Senior High School	157	58.8	141	52.9	298	55.9	
University	32	11.8	32	11.8	64	11.8	
Occupational							1.000
Housewife	157	58.8	141	52.9	298	55.9	
Unskilled Worker	32	11.8	32	11.8	64	11.8	
Government Officer	32	11.8	32	11.8	64	11.8	
Non-Government officer	46	17.6	32	11.8	78	14.7	

Dwelling							0.485
Urban	235	88.2	267	100	503	94.1	
Rural	32	11.8	0	0.0	32	5.9	
Types of Households							1.000
Extended family	32	11.8	16	5.9	48	8.8	
Nuclear Family	235	88.2	251	94.1	486	91.2	
Financial situation							1.000
Enough without saving	157	58.8	141	52.9	298	55.9	
Enough with saving	32	11.8	32	11.8	64	11.8	
Not Enough	46	17.6	32	11.8	78	14.7	
Not enough with debts	32	11.8	32	11.8	64	11.8	

Table 1 shows that the majority of respondents of each group are 20-35 years old (88.2% and 94.1%). Then, most of the respondents are multipara (100% and 88.2%). The highest education level of respondents in each group is high school level (58.8% and 52.9%). The data show that the majority of the respondents are housewives and live-in urban areas. Most of them live with the nuclear family and have a moderate financial level without any savings.

Based on Table 2, the highest difference of mean values of uterine fundus between the control and treatment groups is 2.09 occurred on the 7th day.

Table 2
Changes in Height of Uterine Fundus

Variable	Oxytocin Massage		Postpartum Exercise	
	Mean	Median	Mean	Median
Height of Uterine Fundus day 1	11.84	11.85	11.87	11.85
Height of Uterine Fundus day 4	8.30	8.20	8.29	8.25
Height of Uterine Fundus day 7	5.42	5.50	3.33	3.35
Height of Uterine Fundus day 10	2.04	2.00	0.87	1.00
Height of Uterine Fundus day 14	0	0	0	0

To identify the uterine involution time for postpartum exercise and oxytocin massage groups after the intervention, the study performed an independent t-test. Table 3 shows the average time of uterine involution for the postpartum group is 137.60 hours with a standard deviation of 13.41 hours. Then, for the oxytocin massage group, it reaches 159.06 hours with a standard deviation of 15.52 hours. It indicates that the difference is 22.68 hours. Based on the analysis of the result, the p-value (0.002) is lower than $< \alpha$ (0.05). Thus, it can be concluded that the average time of uterine involution for postpartum exercise group and oxytocin massage group is different. Based on the table above, it can also be concluded that postpartum exercise becomes an effective action to get a minimum uterine involution time with 137.60 hours compared to oxytocin massage with 159.06 hours.

Table 3
Difference in mean time of involution uterine after intervention the postpartum exercise and oxytocin massage

Variable	n	Mean	SD	p-value
Postpartum Exercise Group	267	137.60	12.41	0,002
Oxytocin Massage Group	267	159.06	15.58	

DISCUSSION

The results of the study of 534 respondents show that most of the respondents in both postpartum exercise and oxytocin massage groups are 20-35 years old (91.2%). It is consistent with the statement from Anggraini that women aged 20 - 24 years and 25 - 29 years have the highest birth rate as they are still in the productive period (Anggraeni et al., 2019). This is also supported by the Indonesian Ministry of Health data (2014) that the highest number of women in productive age group aged 25-29 (KEMENKES, 2014). Besides, the results of the current research are in line with a previous study conducted by Sari in which age is closely related to the decrease of uterine fundus height in postpartum women (Sari et al., 2020). The older the people, the less productive the reproductive organs. It is typically found in women older than 35 years old (Sari et al., 2020). As women get older, the elasticity of the muscles of the reproductive organs also decreases (Rahayu & Solekah, 2020). Most of the respondents are multipara (94.1%). The uterine involution process of multipara women tends to decrease compared to primipara women because the elasticity of uterine muscles decreases and it may obstruct the uterine involution (Tri Utami, 2015). The uterus muscles of multipara women are often stretched so that they require a longer period for the uterine involution process (Colin et al., 2019).

In general, the majority of respondents have high school education level (55.9%). It is also consistent with the results of that the majority of respondents in her study also have high school and tertiary education levels. Education level does not have a direct effect on uterine involution (AdekaLisni, Misrawati, 2015). However, many other variables affect it. Education is often associated with socioeconomic status. A person with a low education level usually has a low socioeconomic status (Savitri & ., 2018). It affects the income and purchasing power of daily needs such as staple foods (Azizah et al., 2018). As a result, it will affect nutritional status. If women have higher education and earn income, they will care for themselves more, consume healthy food, and access the best health services (Asyima et al., 2019). Concerning health issues, women who have higher

education levels tend to pay more attention to their health (Hadianti & Sriwenda, 2019).

Based on the results of statistical tests using the independent t-test, the average time of uterine involution after postpartum exercise is 137.60 hours with a standard deviation of 13.41 hours. Meanwhile, for oxytocin massage is 159.06 hours with a standard deviation of 15.52 hours. According to Bobak, Lowdermilk, and Jensen (2005), a week after birth delivery, the uterus is inside the pelvis and cannot be palpated to the abdomen on the ninth day of postpartum. This statement shows that the average time to get normal uterine involution ranges from 168 - 216 hours. Based on the results of the study, it is found that the uterine involution time after the intervention of postpartum exercise and oxytocin massage is at a normal range (Bobak, 2001).

After the postpartum exercise, it is found that the average time of uterine involution is 142.37 hours. The fastest time of uterine involution for postpartum exercise is 121.71 hours. It is consistent with the theory that postpartum exercises are beneficial for postpartum mothers. The result of this study is in line with the previous study conducted by Yuliani, Mato, and Sjafaraenan (2012) in which postpartum exercises are effective to achieve minimum uterine involution time p values (0.000) <α (0.05). Postpartum exercises can strengthen uterine muscle contractions due to an increase in calcium ions of extra cells that bind with calmodulin and will increase myosin kinase and phosphorylase (Istikhomah, 2014). This causes continuous muscle pulling and uterine contractions (Asyima et al., 2019). The continuous contractions and retractions of the uterus will cause blood vessel constriction and rupture. Then, it will disturb the blood transmission to the uterus. Therefore, muscle tissue will lack the necessary substances so that their size will be smaller. Besides, poor blood circulation to the uterus also causes the atrophy and return to its original size (Ibrahim, 1996; Masruroh, 2012).

This study is also coherence with a study conducted by Rullinyl, Ermawati, and Ervareny (2014) which focuses on the effect of postpartum exercise on the decrease of the height of uterine fundus. The study found that postpartum exercise affects the decrease in the height of the uterine fundus with p-value (0.00). The postpartum exercise helps to strengthen uterine muscle contractions (Kyathanahalli et al., 2013). This results in ischemia with blood vessel constriction affecting low blood transfer to the uterus. The size of the tissues will get smaller and followed by a decrease of uterus size (Rahayu & Solekah, 2020).

In this study, the interventions are gymnastics exercise and oxytocin massage. The results of the study show that respondents who receive oxytocin massage also have faster uterine involution time with the fastest time of 128,917 hours. It is consistent with research conducted by Khairani, Komariah, and Mardiah (2012) focusing on the effect of oxytocin massage on the uterine involution of postpartum women. The study found that the oxytocin massage affects the uterine involution of postpartum women with p values of (0.01) < α (0.05). According to Morris (2011), massage can reduce stress and increase comfort with the release of oxytocin. Oxytocin is often called a love hormone and it can be stimulated through massage(Parent-Vachon et al., 2019). Oxytocin is also produced during childbirth because it can cause contractions. Besides, oxytocin also plays a vital role in the process of breastfeeding (Tobore, 2020). Oxytocin from the pituitary gland strengthens and regulates uterine contractions, compresses blood vessels, and helps the process of hemostasis(Rahmadhani, 2020). Uterine muscle contractions and retractions will reduce the blood supply to the uterus. This process will reduce bleeding (Bobak, Lowdermilk, & Jensen, 2005). The result of the analysis shows p-value (0.002) <α (0.05) meaning that Ha is accepted. Thus, the uterine involution time after the treatment of postpartum exercise and oxytocin massage is different. The postpartum exercise results in fasted uterine involution time compared to oxytocin massage(Sari et al., 2020). It is because postpartum exercise encourages women to do exercises as fast as possible so that the muscles can return to normal after childbirth (Aziz, 2018). Postpartum exercise is one of the ways to strengthen the uterine muscle contractions to avoid rupture blood vessels. Rupture blood vessel rupture cause the low supply of substance to vessels which can lower the size of vessels and uterine (Asyima et al., 2019).

CONCLUSION AND SUGGESTION

Based on the results of the study, it is found that the average uterine involution time for the postpartum exercise group is 137.60 hours and 159.06 hours for the oxytocin massage group. Independent t-test results show p-value (0.002) < α (0.05) meaning that there the effective time of uterine involution is different between the postpartum exercise group and oxytocin group. The difference is 22.68 hours. After analyzing the time of uterine involution in both groups, it can be concluded that postpartum exercise becomes the most effective way to get minimum uterine involution time for postpartum women.

ACKNOWLEDGMENTS

The authors would like to express the greatest gratitude all respondents who have participated in this research.

Funding Statement

The author did not receive support from any organization for the submitted work.

Conflict of Interest Statement

Authors declare there is no conflict of interest in this research.

REFERENCES

AdekaLisni, Misrawati, G. T. U. (2015). Perbandingan Efektivitas Senam Nifas dan Pijat oksitosin Terhadap Involusi Uteri pada Ibu Post Partum. Jom, 2(2).

Anggarini, I. A. (2020). Pengaruh Senam Nifas Dan Pijat Oksitosin Terhadap Involusi Uteri Pada Ibu Postpartum. Midwifery Journal: Jurnal Kebidanan UM. Mataram, 5(2). https://doi.org/10.31764/mj.v5i2.1277

Anggraeni, N. P. D. A., Herawati, L., & Widyawati, M. N. (2019). The The Effectiveness Of Postpartum Yoga On Uterine Involution Among Postpartum Women In Indonesia. International Journal of Nursing and Health Services (IJNHS), 2(3). https://doi.org/10.35654/ijnhs.v2i3.164

Asyima, Nasrudin, A. M., & Idris, I. (2019). Influence of oxytocin massage on oxytocin concentration level and involution on postpartum mothers in siti Khadijah I Maternity Hospital, Makassar City. Indian Journal of Public Health Research and Development, 10(4). https://doi.org/10.5958/0976-5506.2019.00832.5

Aziz, R. (2018). Perbedaan Pijat Oksitosin Dan Senam Nifas

Terhadap Involusi Uterus Pada Ibu Nifas Di Wilayah Kerja Puskesmas Cibeureum Kota Tasikmalaya 2017. Jurnal Kesehatan Bakti Tunas Husada: Jurnal Ilmu-Ilmu Keperawatan, Analis Kesehatan Dan Farmasi, 17(2). https://doi.org/10.36465/jkbth.v17i2.257

Azizah, N., Rosydah, R., & Mahfudloh, H. (2018). Retracted: The Comparison of the Effectiveness Back Massage with Clary Sage Essential Oil and Postpartum Exercise for Post Partum Uterus Involution. In Journal of Physics: Conference Series (Vol. 1114, Issue 1). https://doi.org/10.1088/1742-6596/1114/1/012009

Bobak, M. (2001). The seasonality of live birth is strongly influenced by socio-demographic factors. Human Reproduction. https://doi.org/10.1093/humrep/16.7.1512

Colin, V., Keraman, B., & Sundari, A. D. (2019). Effect of Postpartum Gymnastics on Decreasing Height of Uterine Fundus in Post Partum Mothers in BPM Midwife Susi Irma Navia, S.ST Bengkulu City. Jurnal Sains Kesehatan, 26(1). https://doi.org/10.37638/jsk.26.1.70-78

Falomo, M. E., Del Re, B., Rossi, M., Giaretta, E., Da Dalt, L., & Gabai, G. (2020). Relationship between postpartum uterine involution and biomarkers of inflammation and oxidative stress in clinically healthy mares (Equus caballus). Heliyon, 6(4). https://doi.org/10.1016/j.heliyon.2020.e03691

Hadianti, D. N., & Sriwenda, D. (2019). The Effectiveness of Postpartum Exercise and Oxytocin Massage on Uterus Involution. Open Journal of Nursing, 09(03). https://doi.org/10.4236/ojn.2019.93023

Istikhomah, H. S. E. R. (2014). Efektifitas Pijat Oksitosin Dan Senam Nifas Terhadap Proses Involusio Uteri Ibu Postpartum Spontan Di RS PKU Temanggung. Journal.Ummgl.

KEMENKES. (2014). Jaminan Kesehatan Nasional. Www.Jkn.Kemkes.Go.Id.

Kemenkes RI. (2013). Data Dasar Puskesmas. In Journal of Chemical Information and Modeling. https://doi.org/10.1017/CBO9781107415324.004

Kemenkes RI. (2017). Survey Demografi dan Kesehatan Indonesia. In Survei Demografi dan Kesehatan Indonesia 2017.

Kemenkes RI. (2018). Hasil Utama Riset Kesehatan Dasar Tahun 2018. Kementrian Kesehatan Republik Indonesia. https://doi.org/1 Desember 2013

Kyathanahalli, C., Marks, J., Nye, K., Lao, B., Albrecht, E. D., Aberdeen, G. W., Nathanielsz, P. W., Jeyasuria, P., & Condon, J. C. (2013). Cross-species withdrawal of MCL1 facilitates postpartum uterine involution in both the mouse and baboon. Endocrinology, 154(12). https://doi.org/10.1210/en.2013-1325

Lemes, K. M., Silva, L. A., Alonso, M. A., Celeghini, E. C. C., Pugliesi, G., Carvalho, H. F., Affonso, F. J., Silva, D. F., Leite, T. G., & de Arruda, R. P. (2017). Uterine Vascular Perfusion and Involution During the Postpartum Period in Mares. Journal of Equine Veterinary Science, 51. https://doi.org/10.1016/j.jevs.2016.10.010

Parent-Vachon, M., Beaudry, F., Carrier, D., Di Cristo, G., & Vachon, P. (2019). The Effects of Exercise on Pain and Reproductive Performance in Female Pregnant Mice With Neuropathic Pain. Biological Research for Nursing, 21(5). https://doi.org/10.1177/1099800419857812

Radoff, K. A., Thompson, L. M., Bly, K. C., & Romero, C. (2013). Practices related to postpartum uterine involution in the Western Highlands of Guatemala. Midwifery, 29(3). https://doi.org/10.1016/j.midw.2011.12.009

Rahayu, S., & Solekah, U. (2020). Pengaruh Senam Nifas Terhadap Involusi Uterus pada Ibu Post Partum di Puskesmas Mariana Kabupaten Banyuasin Tahun 2020. Jurnal Kebidanan, 12(02). https://doi.org/10.35872/jurkeb.v12i02.388

Rahmadhani, W. (2020). Knowledge of Postpartum Mothers on Postpartum Care in Healthcare Centers in Kebumen. Jurnal Ilmiah Kesehatan Keperawatan, 16(1). https://doi.org/10.26753/jikk.v16i1.379

Rahmadhani, W., & Laohasiriwong, W. (2020). Gender of baby and postpartum depression among adolescent mothers in central Java, Indonesia. International Journal of Child & Adolescent Health, 13(1 PG-43–49).

Sari, R. P., Triyunita, R., & Keraman, B. (2020). Manfaat Senam Nifas Ditinjau dari Involusi Uteri Ibu Postpartum. Jurnal Ilmiah PANNMED (Pharmacist, Analyst, Nurse, Nutrition, Midwivery, Environment, Dentist), 15(2). https://doi.org/10.36911/pannmed.v15i2.683

Savitri, N. P. H., & . S. (2018). Pengaruh Senam Nifas dalam Peningkatan Produksi ASI. Jurnal Kebidanan, 9(02). https://doi.org/10.35872/jurkeb.v9i02.315

SDKI. (2017). Laporan Pendahuluan Survey Demografi dan Kesehatan Indonesia 2017. In Survey Demografi dan Kesehatan Indonesia 2017.

Susanti, N. Y., & Putri, N. K. (2019). Pengembangan Senam Hamil dan Pengaruhnya Terhadap Pengurangan Keluhan Nyeri Pinggang pada Ibu Hamil Trimester III. OKSITOSIN : Jurnal Ilmiah Kebidanan, 6(1). https://doi.org/10.35316/oksitosin.v6i1.343

Tobore, T. O. (2020). On maternal Post-Partum/Natal depression. A global underrecognized problem and the need for better Treatment strategies. Psychiatry Research, 290. https://doi.org/10.1016/j.psychres.2020.113163

Tri Utami, G. (2015). Perbandingan Efektivitas Senam Nifas dan Pijat Oksitosin Terhadap Involusi Uteri Pada Ibu Post Partum. In JOM (Vol. 2, Issue 2).

Vas, J., Cintado, M. C., Aranda-Regules, J. M., Aguilar, I., & Rivas Ruiz, F. (2019). Effect of ear acupuncture on pregnancy-related pain in the lower back and posterior pelvic girdle: A multicenter randomized clinical trial. Acta Obstetricia et Gynecologica Scandinavica, 98(10). https://doi.org/10.1111/aogs.13635