http://ejournal.poltekkes-smg.ac.id/ojs/index.php/MANR

p-ISSN: 2685-2020 ; e-ISSN: 2685-2012

Effectiveness Of Endhorpin Massage On The Success Of Labor Induction

Reka Safitri[1], Wahyu Pujiastuti[2], Bekti Yuniyanti[3]
Email : reka.safitri17@gmail.com

ABSTRACT

Background: Indications of labor induction is main cause maternal mortality in Central Java. Misoprostol can be used for labor induction with success rate of 46%. Besides, endorphin massage was also used to improve the success of misoprostol induction. Endorphin massage could increase endorphin and oxytocin secretion. Thus, the purpose of this study was to determine the effectiveness of endorphin massage on the success of induction.
Methods: This study was carried out by quantitative design with quasi-experimental design and non-equivalent control group pretest post-test design. The population of this study were pregnancy women with misoprostol induction at RSUD Dr. Soedirman Kebumen that collected between January 17th to February 17th 2022, as many as 30 respondents. The participants were divided into two groups, the experimental group, which were given misoprostol induction with endorphin massage, and the control group, which were given misoprostol induction without endorphin massage. Bishop score alteration observation for misoprostol induction success was in 6 hours since misoprostol induction was given to the patient
Results: The results of Wilcoxon Signed Rank Test showed significant difference in the bishop score before after the induction with endorphin massage ($p=0.001;p<0.05$) and significant difference in the bishop score before after without endorphin massage ($p=0.024;p<0.05$). The result of Mann-Whitney test showed a significant difference between the increase in the bishop score of the group with endorphin massage and without endorphin massage ($p=0.000;p<0.05$).
Conclusions: Endorphin message was found to further increase the success of labor induction than without endorphin massage. This findings could be applied in clinical practice to improve the accomplishment of labor induction.

Keywords: Endorphin massage, induction, misoprostol

[1,]*RSUD Dr.Soedirman*
Jl. Kebumen Raya,Muktisari, Kebumen, Jawa Tengah, Indonesia
[2,3]*Departments of Midwifery, Poltekkes Kemenkes Semarang, Indonesia*
Jl. Perintis Kemerdekaan Magelang, Jawa Tengah, Indonesia
[2,3]*Handling Non Communicable Diseases, P2PTM, Pusat Unggulan Ipteks, Poltekkes Kemenkes Semarang, Indonesia*

Received: August 14, 2022; Revised: September 19, 2022; Accepted: September 25, 2022

Background. Maternal Mortality Rate (MMR) is one indicator to determine the success of maternal health efforts. In 2020, cause of maternal death in Central Java were bleeding (91 cases), gestational hypertension (127 cases), infections (22 cases), vascular disorder (23 cases), and others (257 cases). Maternal mortality can be minimized with prompt and appropriate treatment for preventing complications. (Kemenkes, 2020).

Gestational hypertension, diabetes mellitus, post-term pregnancy dan IUFD are some of indication of labor induction. Induction will trigger cervical ripening, which involves prostaglandins to soften and open the cervix (Cunningham, et al 2013). Misoprostol is one of labor induction drug that usually used in clinical practice.

Misoprostol is synthetic prostaglandin E1 (PGE1) which available in oral and vaginal regiments. Misoprostol occupies prostaglandin receptors in the myometrium. PGE1 increases calcium transport across cell membranes and regulates cyclic adenosine monophosphate

http://ejournal.poltekkes-smg.ac.id/ojs/index.php/MANR

p-ISSN: 2685-2020 ; e-ISSN: 2685-2012

(AMP) in uterine smooth muscle to promote contraction. PGE1 also triggers cervical ripening by stimulating collagenase activation which breaks down collagen tissue, and causing cervical effacement (Berghella, 2017). Misoprostol induction can be described as an effective induction in > 5 the bishop score. However, the first attempt at induction sometimes could be failed. One of the non-pharmacological therapies to accelerate the labor process is endorphin massage (Aprilia, 2011).

Endorphin massage was known to be used to relax the patients and increase oxytocin release (Aprilia, 2011). Oxytocin is a hormone that increases uterine smooth muscle contraction during labor. Near the end of pregnancy, oxytocin receptors increases in uterus, which resulting an increased sensitivity of the uterus and during labor (Hall, 2014). Thus, the purpose of this study was to determine the effectiveness of endorphin massage on the success of induction.

Methods. The study design used was quasi-experimental by grouping the participants not randomly with a non-equivalent control group pretest post-test design. The population of this study were pregnancy women with misoprostol induction at RSUD Dr. Soedirman Kebumen that collected between January 17th to February 17th 2022, as many as 30 respondents. This study has been approved by health reserch ethics committee universitas Muhammadiyah gombong with the protocol number 22112000001

Criteria inclusion of this study were pregnant women with maternal delivery using misoprostol induction, multiparity and estimated fetal weight (EFW) between 3000-3500 gram. Criteria exclusion of this study were Maternal mothers who were not willing to be respondents, stopped induction because of certain indications.

This study was carried out using accidental sampling technique. We divided the respondents into two groups, the experimental group (given misoprostol induction with endorphin massage) and the control group (given misoprostol induction without endorphin massage). The bishop score was measured before being given misoprostol to experimental and control group.

Endorphin massage was given to experimental group after 30 minutes misoprostol induction. The massage was conducted for 30 minutes and repeated with a distance of 2 hours. The effectivity of induction was evaluated based on the bishop score after 6 hours.

All statistical analyses were performed using SPSS 23.0. The difference in the effectivity of misoprostol induction before and after being given endorphin massage and without endorphin massage were analyzed using Wilcoxon test and the differences in Bishop's score given endorphin massage and without endorphin massage were using the Mann-Whitney test.

Result and Discussion. Participant selected in this study were 30 pregnant women. Detailed participants' characteristics are described in Table 1.

Table 1. Participants' Characteristics of the Study

Characteristics	n
Participants	30
Age (years)	32,03 (24 – 42)
Delivery Age (weeks)	40 (37 – 41)

The participants were divided into control and experimental groups. Univariate and bivariate analysis were used in this study. The results of univariate analyses are shown in Table 2.

Table 2. Bishop Score, Before and After Treatment

Variable	Experimental Group			Control group		
	Q2	Max. Value	Min. Value	Q2	Max. Value	Min. Value
Before	2	1	3	2	1	4
After	6	4	10	3	1	5
Changes (∆)	4	2	8	0	0	3

http://ejournal.poltekkes-smg.ac.id/ojs/index.php/MANR

p-ISSN: 2685-2020 ; e-ISSN: 2685-2012

The results showed that the median bishop score before misoprostol induction with endorphin massage was 2, the minimum value was 1 and the maximum value was 3. The median bishop score before misoprostol induction without endorphin massage was 2, the minimum value was 1 and the maximum value was 4. Bishop score before misoprostol induction as many as 30 respondents <5 means cervical ripening is still needed for successful induction.

Our study also described the median bishop score after misoprostol induction without endorphin massage increased from 2 to 3. This study also reported that induction by misoprostol with endorphin massage could increase bishop score with median value from 2 to 6, higher from the control group.

The bivariate analysis was done using Wilcoxon test and Mann-Whitney test. The result was shown in Table 3.

Table 3. Wilcoxon Signed Rank Test

Variable	P Value
Bishop score in experimental group with endorphin massage	0.001*
Bishop score in control group	0.024*

Bishop scores before and after endorphin massage from 15 respondents showed an increased scores. The analytical results of Wilcoxon signed rank test (Table 3) showed a significant difference between the bishop score before and the bishop score after being induced with endorphin massage (P = 0.001) or without endorphin massage (P = 0.024).

Further analysis used were Mann-Whitney test to determine the difference in bishop's score change between control and experimental (endorphin massage) group. The result was shown in Table 4 below.

Table 4. Mann-Whitney Test Result

Variable		N	Mean Rank	Sum of Ranks	P value
Bishop Score changes	With endorphin massage	15	22.63	339.50	0.000*
	Without endorphin massage	15	8.37	125.50	
	Total	30			

This data showed that there is a significant difference between the increase in the bishop score in the group with endorphin massage towards group without endorphin massage (p=0.000). We interpreted that the bishop score with endorphin massage were more effective than without endorphin massage.

This Bishop score examination result of several indicators such as cervical dilatation, cervical effacement, hodge plane, cervical consistency, and cervical position (Cunningham et al., 2013). This indicator will increase its value if there is an increase in contractions, one way to increase contractions with external stimuli, one of which is endorphin massage (Meintri Lanasari *et al.*, 2018)

Previous study showed that Bishop's score of 6, parity and gestational age are effective in predicting successful labor after induction and that cervical dilatation is an appropriate index for this prediction (Ikeotuonye *et al.*, 2018). The increase in the bishop's score also reported in other study, which showed that endorphin massage had a significant effect on the speed of cervical dilatation in the first stage of labor at Sidoarjodena Hospital (P=0.000). Induction of misoprostol with endorphin massage induced contractions and an increase in Bishop's score in labor because it relaxed the patient thus release endorphin and oxytocin hormones to produce prostaglandin feedback (Cahyani, 2017). Besides, misoprostol is prostaglandin agent that play a role for cervical maturation (Cahyani, 2017). Misoprostol has fast and well resorption. This drug is metabolized as misoprostat acid with a half-life of 20-40 minutes (Tjay and Rahardja, 2015).

The bishop score in this study were experienced various increases. The results of this study showed effectiveness of endorphin massage on participants who were given misoprostol induction from 15 respondents 9 of whom experienced an increase in Bishop score > 5 which could be assessed from cervical dilatation, cervical effacement, head reduction measured from the hodge plane, cervical consistency and cervical position. This findings proved that the induction of misoprostol with endorphin massage could shorten the length of labor compared to the induction of misoprostol without endorphin massage. Previous study also showed an effect of endorphin massage on the

acceleration of labor in primiparous stage 1 active phase with p value of 0.000 (Sukma, 2017).

Based on previous study, the bishop score increase was influenced by the levels of neutrophils contained in the serum stroma detected through vaginal examination. Neutrophils will produce collagen in the form of matrix metalloproteinase-8 (MMPs-8) which will degrade cervical collagen fibers, so that the cervix becomes soft and mature (Boby and Serudji, 2022). Neutrophils are one of the body's immune cells that function to mediate labor by releasing inflammatory substances in the form of cytokines, chemokines and MMPs. Neutrophils are the key in the cervical degradation process by MMPs enzymes that make the cervix softer and easier to thin and open (Gomez-Lopez *et al.*, 2014).

In this study, the cervical ripening induced by misoprostol with addition of endorphin massage was reported to increase the success rate. Previous study also provided a massage to the spine, which increase oxytocin levels thus higher levels of oxytocin lead to accelerate the progress of labor. Successful labor can be approached with relaxed condition of the mother (Wijaya *et al.*, 2018). Massage or stimulation of the spine also stimulate the medulla oblongata to release neurotransmitter to the hypothalamus in anterior pituitary (Hidayati *et al.*, 2021). The anterior pituitary will lead to β-endorphin secretion, which cause the body relaxation, and increase the release of the hormone oxytocin, which stimulate uterine contractions during the labor phase (Aryani *et al.*, 2015). Relaxation of mother could occur as a result of the increase in β-endorphins, within dilation of blood vessels, which accelerate oxytocin-carrying blood flow (Aryani *et al.*, 2015; Wijaya *et al.*, 2018).

Endorphin massage also could reduce the level of anxiety in first-stage primigravida mothers. Endorphin massage reduced anxiety, tension and discomfort experienced by mothers in labor will be reduced because touch or endorphin massage has a positive influence on the mother's physical and psychological well-being (Arianti and Restipa, 2019).

This study strengthened previous study about the benefit of endorphin massage and suggested midwife practitioner to improve the accomplishment of labor induction by endorphin massage. Besides, this study had limitation in terms of homogenized patients according to the inclusion and exclusion criteria without assessing other aspects that affect progress such as psychological aspects or certain diseases.

Conclusion and Suggestions. This study found that endorphins massage could increase the success of induction on misoprostol induction. This findings could be applied in clinical practice to improve the accomplishment of labor induction.

Acknowledgements. We would like to thank Health Polytechnic of Semarang for supporting our research and preparation of the manuscript.

References

Aprilia Y (2011). *Hipnostetri: Rileks, Nyaman Dan Aman Saat Hamil Dan Melahirkan*. Jakarta: Gagas Media.

Arianti D and Restipa L (2019). Pengaruh Endorphine Massage Terhadap Tingkat Kecemasan Ibu Primigravida. *Jik- Jurnal Ilmu Kesehatan*, 3(2), pp.: 103. doi: 10.33757/jik.v3i2.232.

Aryani Y, Masrul M and Evareny L (2015). Pengaruh Masase Pada Punggung Terhadap Intensitas Nyeri Kala I Fase Laten Persalinan Normal Melalui Peningkatan Kadar Endorfin. *Jurnal Kesehatan Andalas*, 4(1), pp.: 70–77. doi: 10.25077/jka.v4i1.193.

Berghella V (2017). *Obstetric Evidence Based Guidelines*. *Obstetric Evidence Based Guidelines*. doi: 10.1201/9781315200903.

Boby H and Serudji J (2022). Perbedaan Kenaikan Skor Bishop Antara Neutrofil Swab Vagina ≤ 5dan >5 Pada Kehamilan ≥ 41 Minggu Yang Di Induksi Dengan Misoprostol. *Jurnal Ilmiah Indonesia*, 7(5).

Cahyani RA (2017). The Effect of Endorphin Massage on Cervical Dilatation Rate at Active Phase on First Stage Labor in Primigravida with Labor Induction at Sidoarjo Hospital. *ADLN Perpustakaan Airlangga*, 1(2).

p-ISSN: 2685-2020 ; e-ISSN: 2685-2012

Cunningham F, Leveno K, Bloom S, Spong C, Dashe J and Hoffman B (2013). *Williams Obstetric*. McGraw Hill Education.

Gomez-Lopez N, StLouis D, Lehr MA, Sanchez-Rodriguez EN and Arenas-Hernandez M (2014). Immune Cells in Term and Preterm Labor. *Cellular and Molecular Immunology*, 11(6), pp.: 571–581. doi: 10.1038/cmi.2014.46.

Hall J (2014). *Buku Ajar Fisiologi Kedokteran Guyton Dan Hall*. Elsevier Inc.

Hidayati T, Hanifah I, Yuliana W, Widayati A, Natalia MS and Faraswati R (2021). *Kumpulan Penelitian Tentang Evidence Based Dari KIA Dan KESPRO*.

Ikeotuonye AC, Anikwe CC, Obuna JA, Okorochukwu BC, Ejikeme BN, Ifemelumma CC, Ekwunife IC and Okoroafor FC (2018). Relationship between Bishop Score and Success of Induction of Labour in Federal Teaching Hospital, Abakaliki, Ebonyi State. *Open Journal of Obstetrics and Gynecology*, 08(11), pp.: 980–992. doi: 10.4236/ojog.2018.811099.

Kemenkes (2020). Profil Kesehatan Indonesia.

Meintri Lanasari N, Rahayu S and Panggayuh A (2018). Pengaruh Pijat Endorphin Terhadap Percepatan Involusi Uteri Pada Ibu Nifas Post Sectio Caesarea. *Jurnal Ilmiah Bidan*, III(1), pp.: 15.

Sukma N (2017). Pengaruh Endorphine Massage Terhadap Percepatan Persalinan Primipara Kala Fase Aktif Di Rumah Sakit Bhayangkara Makassar. *JIKKHC*, 2(1).

Tjay TH and Rahardja K (2015). *Obat-Obat Penting*. Edisi 7. Jakarta: Elex Media Komputindo.

Wijaya M, Bewi DWT and Rahmiati L (2018). Pengaruh Pijat Oksitosin Terhadap Nyeri Dan Kemajuan Persalinan Pada Ibu Bersalin. *Jurnal Ilmiah Bidan*, III(3), pp.: 27–34.