Lamp C….

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH

Judul Artikel Ilmiah	:	**The Impact Impact of Lavender Aromatherapy on Pain Intensity and Beta-Endorphin Levels in Post-Caesarean Mothers**
Nama semua penulis	:	Yohana Putri Apryanti, **Suhartono**, Ngadiyono
Status Pengusul (coret yg tidak perlu)	:	~~Penulis Utama/ Penulis Utama & Korespondensi/Penulis Korespondensi~~/ **Penulis Anggota**

Status Jurnal:

) Nama Jurnal	:	**Belitung Nursing Journal**
) Tahun terbit/Vol/No/halaman	:	2017/Vol 3, No 5/hal.487-495
) Edisi (bulan, tahun)	:	September - October 2017
) ISSN	:	ISSN : e-ISSN 2477-5525 p-ISSN 2406-8810
) DOI	:	https://doi.org/10.33546/bnj.199
) Alamat WEB Jurnal/ Proceeding	:	https://belitungraya.org/BRP/index.php/bnj/article/view/194
) Terindex di	:	Sinta 3 (Sinta 3 (10/E/KPT/2019), DOAJ,Google scholar, Garuda, scopus

Kategori Publikasi (beri tanda V yang sesuai)

)Jurnal Internasional	[ ]	Jurnal internasional bereputasi & memiliki impact factor
	[ ]	Jurnal internasional bereputasi,
	[ ]	Jurnal Internasional
)Jurnal Nasional	[ ]	Jurnal Nasional Terakreditasi Dikti Peringkat 1 atau 2
	[√]	Jurnal Nasional berbahasa Inggris Terindeks CABI atau Copernicus, atau Berbahasa Inggris Terkreditasi Peringkat 3 atau 4
	[ ]	Jurnal Nasional berbahasa Indonesia Terakreditasi peringkat 3 atau 4
	[ ]	Jurnal Nasional

Hasil Penilaian Peer Review:

No	Komponen yang dinilai	Nilai Maksimal Artikel Jurnal Nasional berbahasa Inggris Terindeks CABI atau Copernicus, atau Berbahasa Inggris Terkreditasi Peringkat 3 atau 4	Nilai yang didapat artikel
a	Kelengkapan unsur isi artikel (10 %)	2	1.86
b	Ruang lingkup & kedalaman pembahasan (30 %)	6	5.6
c	Kecukupan dan kemutahiran data/informasi dan metodologi (30 %)	6	5.45
d	Kelengkapan unsur dan kualitas jurnal (30%)	6	5.59
	Nilai Total	**20**	**18.5**
	Nilai yang didapat pengusul: 18.5X 0.4 = 7.4/2=3.7		

Catatan Penilaian artikel oleh Reviewer

a	Kelengkapan unsur isi artikel	Acknowledgement (-), state of art pada introduction cukup baik.
b	Ruang lingkup & kedalaman pembahasan	Pembahasan dilakukan dengan membandingkan hasil penelitian dengan beberapa penelitian terdahulu dan teori. Sudah dibahas dengan cukup mendalam.
c	Kecukupan dan kemutahiran data/informasi dan metodologi	Metodologi dan referensi lengkap dan jelas. Kemutakhiran dapat dilihat dari referensi, terdapat 5 sumber dari jurnal >10 th dari 18 referensi, dan selebihnya buku dan jurnal <10 th.
d	Kelengkapan unsur dan kualitas jurnal	Grammar error (+) unsur terbitan memadai termasuk volume, issue, tahun, ISSN.

Semarang, 13 April 2020
Reviewer 1

Prof. Dr. dr. Tri Indah Winarni, MSi.Med, PA.
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Unit kerja: Fakultas Kedokteran

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	[ ]	Jurnal Nasional berbahasa Indonesia Terakreditasi peringkat 3 atau 4
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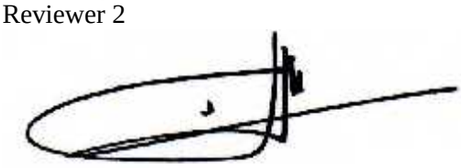
Hasil Penilaian Peer Review:

No	Komponen yang dinilai	Nilai Maksimal Artikel Jurnal Nasional berbahasa Inggris Terindeks CABI atau Copernicus, atau Berbahasa Inggris Terkreditasi Peringkat 3 atau 4	Nilai yang didapat artikel
a	Kelengkapan unsur isi artikel (10 %)	2	1.86
b	Ruang lingkup & kedalaman pembahasan (30 %)	6	6
c	Kecukupan dan kemutahiran data/informasi dan metodologi (30 %)	6	5.85
d	Kelengkapan unsur dan kualitas jurnal (30%)	6	5.79
	Nilai Total	**20**	**19.5**
	Nilai yang didapat pengusul: 19.5X 0.4 = 7.8/2=3.9		

Catatan Penilaian artikel oleh Reviewer

a	Kelengkapan unsur isi artikel	Unsur isi artikel telah lengkap sesuai dengan format penulisan artikel dalam jurnal ilmiah yang dituju yaitu abstract, introduction, methods, results, discussion, conclusion, references.
b	Ruang lingkup & kedalaman pembahasan	Penulis telah membahas hasil penelitian dengan membandingkan penelitian sebelumnya dan juga menjelaskan teorinya.
c	Kecukupan dan kemutahiran data/informasi dan metodologi	Dalam metode penelitian telah menjelaskan desain penelitian, sampling, pengukuran variabel, cara intervensi, analisis data, dan etika penelitian. Hasil penelitian disajikan dalam bentuk table yang informatif. Di bawah tabel perlu ditambah keterangan untuk uji statistic yang digunakan.
d	Kelengkapan unsur dan kualitas jurnal	Artikel diterbitkan oleh jurnal terindeks Sinta 3 (10/E/KPT/2019), DOAJ,Google scholar, Garuda. Terdapat International Editorial Advisory Board dan Editorial Board Members dari berbagai negara.

Semarang, 15-4- 2020
Reviewer 2



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NOMOR 10/E/KPT/2019

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TAHUN 2019

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PERINGKAT AKREDITASI JURNAL ILMIAH PERIODE II TAHUN 2019

Peringkat	No	Nama Jurnal	E-ISSN	Penerbit	Keterangan
2	1	Adabiyyat: Jurnal Bahasa dan Sastra	25492047	Fakultas Adab dan Ilmu Budaya UIN Sunan Kalijaga	Reakreditasi tetap di peringkat 2 mulai volume 2,nomor 1, tahun 2018
	2	Akrual: Jurnal Akuntansi	25026380	Universitas Negeri Surabaya	Reakreditasi naik peringkat dari peringkat 3 ke 2 Mulai Volume 9, Nomor 2 Tahun 2018
	3	Al-'Adalah	2614171X	Fakultas Syari'ah Institut Agama Islam Negeri Raden Intan, Lampung	Reakreditasi tetap di peringkat 2 mulai volume 15,nomor 2, tahun 2018
	4	Al-A'raf : Jurnal Pemikiran Islam dan Filsafat	25275119	Fakultas Ushuluddin dan Dakwah (FUD) IAIN Surakarta	Reakreditasi naik peringkat dari peringkat 3 ke 2 Mulai Volume 15, nomor 2, tahun 2018
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	6	Amerta Nutrition	25801163	Universitas Airlangga	Usulan baru mulai volume 1, nomor 1, tahun 2017
	7	ASEAN Journal of Community Engagement	25809563	Directorate of Research and Community Engagement Universitas Indonesia	Usulan baru mulai volume 1, nomor 1, tahun 2017

	73	Warta IHP (Industri Hasil Pertanian)	26544075	Balai Besar Industri Agro	Reakreditasi tetap di peringkat 2 mulai volume 35, nomor 2 tahun 2018
	74	Warta Penelitian Perhubungan	25801082	Sekretariat Badan Penelitian dan Pengembangan Perhubungan	Reakreditasi naik peringkat dari 3 ke 2 mulai volume 30, nomor 2 tahun 2018
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	2	Al Amwal: Jurnal Ekonomi dan Perbankan Syari'ah	25273876	Jurusan Perbankan Syari'ah Fakultas Syari'ah dan Ekonomi Islam IAIN Syekh Nurjati Cirebon	Usulan baru mulai volume 9, nomor 1, tahun 2017
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	8	Bali Journal of Anesthesiology	25492276	Department of Anesthesiology, Intensive Care and Pain Management, Faculty of Medicine Udayana University	Reakreditasi naik peringkat dari peringkat 5 ke 3 mulai Volume 2 nomor 3 tahun 2018
	9	Belitung Nursing Journal	24774073	Belitung Raya Publisher - Belitung Raya Foundation	Reakreditasi naik peringkat dari peringkat 4 ke 3 mulai Volume 5 Nomor 1 Tahun 2019
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E-ISSN: 2477-4073 | P-ISSN: 2528-181X

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BNJ is accepted and indexed in:

February 2021

- Acceptance rate: 25%
- Rejection rate: 75%
- Total submission: 34
- Days to review: 27
- Days to publication: 75

Announcements

Accepted in Scopus

We are very pleased to inform you that BNJ has been accepted in Scopus on October 5, 2020.

Posted: 2020-10-06

New Guidelines for Research Data

Starting from August 19, 2020, authors submitting their research article to this journal are **encouraged** to deposit research data as a supplementary file during submission or in a relevant data repository and cite and link to this dataset in their article. If this is not possible, authors are encouraged to make a statement explaining why research data cannot be shared. Sharing your data help you get credit for your work and make your data accessible and discoverable for your peers. More information please check data sharing policy.

Posted: 2020-08-19

BNJ is indexed in Web of Science

As of July 22, 2020, Belitung Nursing Journal has been fully accepted in **Web of Science**. Articles

EARLY VIEW [MOST RECENT ARTICLES]

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Apryanti YP, et al. Belitung Nursing Journal. 2017 October;3(5):487-495
Received: 11 March 2017 | Accepted: 30 October 2017
http://belitungraya.org/BRP/index.php/bnj/

ORIGINAL RESEARCH **ISSN: 2477-4073**

THE IMPACT OF LAVENDER AROMATHERAPY ON PAIN INTENSITY AND BETA-ENDORPHIN LEVELS IN POST-CAESAREAN MOTHERS

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ABSTRACT

Background: Caesarean section is one of the most common interventions to overcome labor complications. However, pain cannot be avoided after the surgery. Lavender aromatherapy is considered as one of non-pharmacological therapy to reduce pain and increase beta-endorphin levels.

Objective: To examine the effect of lavender aromatherapy on the intensity of pain and beta-endorphin levels in post-caesarean mothers.

Methods: This was a quasi-experimental study with pretest and posttest with control group at Sembiring Delitua General Hospital in Indonesia on December 2016 to February 2017. There were 40 samples selected using purposive sampling, with 20 samples assigned in the experiment and control group. Numerical Rating Scale (NRS) was used to measure pain and ELIZA methods to measure beta-endorphin levels. Independent t-test and paired t-test were used for data analysis

Results: Results of this study showed that there was a significant difference in the mean value of pain intensity levels ($p = 0.000$) and beta-endorphin levels ($p = 0.023$) between experiment and control group.

Conclusion: There was a significant effect of lavender aromatherapy on the decrease of pain intensity and the increase of beta-endorphin hormone in post-caesarean mothers. It is expected that lavender aromatherapy can be used as an alternative treatment to reduce pain and increase beta-endorphin levels in post-caesarean mothers.

Keywords: caesarean section, pain intensity, beta-endorphin, lavender aromatherapy

Editor's Note: This article has been updated on 7 July 2020 in terms of minor changes in the reference format. The update is according to BNJ Policy on article correction.

Indarwati R, et al. Belitung Nursing Journal. 2017 October;3(5):450-461
Received: 31 May 2017 | Revised: 18 June 2017 | Accepted: 2 July 2017
http://belitungraya.org/BRP/index.php/bnj/

ORIGINAL RESEARCH **ISSN: 2477-4073**

ANALYSIS OF FACTORS AFFECTING POST-POWER SYNDROME AND QUALITY OF LIFE IN THE ELDERLY

Retno Indarwati[1,2]*, Nursalam[2], Rachmat Hargono[1], Suprajitno[3], Joni Haryanto[2], Rista Fauziningtyas[2], Randy Yusuf Pratama[2]

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ABSTRACT

Background: Quality of life is the individuals' perception of their place in life in the context of the cultural system and values in which they live, along with their goals, expectations, and worries. Retirement is an adaptable period that results in a change of role, changes in social interactions, and limited financial resources.
Aim: This study aims to analyze the factors that affect post power syndrome and quality of life of the elderly.
Methods: The design of this research was a correlation study with a cross-sectional approach. The population consisted of 44 retired elderly individuals. Purposive sampling was applied to the determined sample size. The independent variables were physiological stressors, psychological stressors and aging attitudes. The dependent variables were post-power syndrome and the quality of life of elderly people. The data were analyzed using Structural Equation Modeling- Partial Least Square (SEM-PLS) with a significance *t* statistic ≥ 1.96.
Results: The findings showed all of the significant indicators measured to the variable factor. Physical stressor factors affect post-power syndrome with a *t* value of 2.366, and psychological stress factors affect post-power syndrome with a *t* value of 3.326. Aging behavior factors affects post-power syndrome with a *t* statistic of 5.296 and the post-power syndrome effect on the quality of life of the elderly has a *t* value of 7.689.
Conclusion: There were significant effects in relation to physiological stressor factors, psychological stress factors, and aging attitudes towards post-power syndrome. There was an influence of post-power syndrome on the quality of elderly life.

Keywords: quality of life, post power syndrome, elderly

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ADDRESSING VIEWS OF KEY INFORMANTS WHO ARE WORKING FOR WOMEN RIGHTS REGARDING INTIMATE PARTNER VIOLENCE

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ABSTRACT
Some married women are experiencing different types of intimate partner violence by their current or former husband. However, the awareness and services for those women are still needed. This study explored the key informants' perspectives to provide more comprehensive services to those women. Qualitative feminist method was used and five participants were purposefully selected to interview in depth. Key informants reflected upon intimate partner violence as causes of intimate partner violence, why intimate partner violence cases were underreported, why didn't women leave their violent partner, what they actually felt for intimate partner violence, gaps with intervention for survivors and planning for better outcome. It was found that awareness among women who experiencing violence and the people around them needed to be raised. And services provided for them also needed to be more concise and updated. Therefore, it is essentially important to extend education session to all people regarding violence against women. Collaboration and cooperation of government and non-governmental organizations is also helpful to decrease various kinds of violence committed to women.

Keywords: key informants, service providers, intimate partner violence, women's rights

INTRODUCTION

Intimate partner violence is one of the most common forms of violence against women and includes physical, sexual, and emotional abuse and controlling behaviours by an intimate partner.[1] Violence happens because of men's greater power and their misuse of that power. Women are not guilty for violence committed by men on their body, mind and spirit.[2] Therefore, it is

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THE IMPACT OF LAVENDER AROMATHERAPY ON PAIN INTENSITY AND BETA-ENDORPHIN LEVELS IN POST-CAESAREAN MOTHERS

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THE IMPACT OF LAVENDER AROMATHERAPY ON PAIN INTENSITY AND BETA-ENDORPHIN LEVELS IN POST-CAESAREAN MOTHERS

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ABSTRACT

Background: Caesarean section is one of the most common interventions to overcome labor complications. However, pain cannot be avoided after the surgery. Lavender aromatherapy is considered as one of non-pharmacological therapy to reduce pain and increase beta-endorphin levels.

Objective: To examine the effect of lavender aromatherapy on the intensity of pain and beta-endorphin levels in post-caesarean mothers.

Methods: This was a quasi-experimental study with pretest and posttest with control group at Sembiring Delitua General Hospital in Indonesia on December 2016 to February 2017. There were 40 samples selected using purposive sampling, with 20 samples assigned in the experiment and control group. Numerical Rating Scale (NRS) was used to measure pain and ELIZA methods to measure beta-endorphin levels. Independent t-test and paired t-test were used for data analysis

Results: Results of this study showed that there was a significant difference in the mean value of pain intensity levels ($p = 0.000$) and beta-endorphin levels ($= 0.023$) between experiment and control group.

Conclusion: There was a significant effect of lavender aromatherapy on the decrease of pain intensity and the increase of beta-endorphin hormone in post-caesarean mothers. It is expected that lavender aromatherapy can be used as an alternative treatment to reduce pain and increase beta-endorphin levels in post-caesarean mothers.

Keywords: caesarean section, pain intensity, beta-endorphin, lavender aromatherapy

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INTRODUCTION

Caesarean section is one of the most common interventions to treat dystocia, especially in mothers with complications or risk factors of gestational distance, maternal age > 35 years, obesity, height <150 cm, and over-month pregnancy. Cesarean delivery also will be at a greater risk of 46% if there was a case of dystocia in previous pregnancies.[1]

Research conducted at Liun Kendage Hospital in Makasar in 2014 indicated that cesarean section increased 31.14% by various indications, namely: prolonged labor (27.55%), preeclampsia (24.55%), and narrow pelvis (16.76%).[2] Similar with Pirngadi Hospital in Medan found that the incidence of c-section increased in 2014 was 62.4% with referral case (94%), eclampsia/preeclampsia (36.8%), complications of pulmonary edema (2.1%) and require treatment duration of 4-5 days (41.4%).[3]

Due to the use of narcotic drugs and painkillers after cesarean section, mothers often complain of dizziness, nausea or vomiting and excessive sleep, especially for 48 hours after surgery.[4] In addition, postoperative pain, especially in the area of injury incision in two months after the operation that can take place constantly every day in the form of mild pain felt on the move and rest.[5] Pain that occurs after c-section is a result of a tissue incision resulting in loss of tissue continuity that causes a pain response. The pain is also the result of the stimulation of nerve endings by chemicals released at the time of surgery or due to tissue ischemia because of impaired blood flow to one part of tissue that is disconnected due to wound of c-section. The pain perceived by clients after c-section varies from mild to very severe pain, depending on factors that affect pain, as the nature of the pain is highly subjective. [5]

According to literature, it was found that 75% of surgical patients had moderate severe pain after surgery.[6] This is consistent with the results of the study found that 93% of patients with c-section suffered from moderate to severe pain using the Visual Analogue Scale (VAS).[7] Similarly, in India almost 66.3% of post-caesarean women complained moderate to severe pain, and 15.4% of headache and 19.4% of back pain, which resulted in inability to breastfeed immediately after surgery due to inadequate breast milk.[8] Another study also said that 76.5% of respondents did not breastfeed their babies for the first time because of pain post-caesarean section.[9]

Pain can last for 24 to 48 hours, but may last longer depending on how patient can tolerate and respond to the pain. In other studies it was found that women experienced pain level with pain intensity during the first 24 hours post caesarean section.[10] Effort to reduce the pain in the post-caesarean mothers is to use pharmacological and non-pharmacological treatment. Implementation of pain with pharmacological treatment is by using analgesic drug either intravenously or intramuscular, such as the combination of 75 mg bupivacaine 0.5% and 30 mg clonidine, and 75 mg bupivacaine 0.5% and 25 mg fentanyl. However, these kinds of drugs have side effects, such as hypotension and shivering. Thus, non-pharmacological treatment could be an alternative, which is also affordable and no side effects.

Aromatherapy is one of the non-pharmacological methods that can cause relaxation and comfort to encourage the release of neurotransmitters, such as enkephalins and endorphins. Lavender (Lavandula officinalis) is one type of flowers that produces essential oil, so it can be used for aromatherapy with the main components of linalool oil (51%) and linalyl acetate (35%).[11] Lavender is considered having an effect of analgesic, antiseptic, antidepressant, antispasmodic, antiviral, diuretic, and hypotensive in which all the effects of lavender contribute to a relaxing effect.[12]

Lavender is also the most popular and safest oil to use, which can stimulate the sensory and ultimately affect other organs so that it can have a strong effect on the emotions. Aromatherapy is captured by a receptor in the nose, then provides further information to areas of the brain that control emotions and memory, and provides information to the hypothalamus which is the regulator of the body's internal system, sexuality system, body temperature, and reaction to stress and hormonal system diseases. Previous study suggested that lavender aromatherapy for 15 minutes may decrease the intensity of post-caesarean mother's pain.[12] Therefore, this study aimed to examine the effect of lavender aromatherapy to reduce pain in post-caesarean mothers.

METHODS

Design

This was a quasi-experimental study with pretest and posttest with control group. The research was conducted at Sembiring Delitua General Hospital in Indonesia for 2 months starting from December 2016 to February 2017.

Sample

There were 40 samples selected using purposive sampling, with 20 samples assigned in the experiment and control group. The inclusion criteria were a mother in the 1st day of post caesarean section, full awareness, not allergic with aromatherapy, could communicate verbally, and willing to be a respondent.

Instruments

Numerical Rating Scale (NRS) was used to measure pain in this study, ranging from 0 to 10 (0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, and 7-10 = severe pain). The coefficient of reliability ranged from 0.66 to 0.84. While beta-endorphin levels were measured using ELIZA (Enzyme-Linked immunosorbent assay) method in laboratory. Pain and beta-endorphin were measured before and after given intervention.

Intervention

The experiment group was given an intervention of aromatherapy in a diffuser that has been spilled with essential oil lavender as much as 5 drops and water mixture according to tool size and connect to electricity. The diffuser was positioned 10-30 cm from patients. Before intervention, the researchers prepared the patient by positioning the patient in a relaxed and comfortable state and could be accompanied by the family. The intervention spent for 15 minutes to breathe and inhale lavender, and performed 3 times (4 hours, 8 hours, and 12 hours after surgery) for 2 days. While control group was given a diffuser but no essential oil.

Ethical consideration

Ethical clearance of this research was obtained from the ethics commission of Poltekkes Kemenkes Semarang No. 066 /

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Data analysis

To determine the influence of lavender aromatherapy on pain intensity and endorphin beta hormone levels, Independent t-test and paired t-test were used. Normality test has been examined, and its results showed that pain intensity and beta-endorphin levels were in normal data distribution.

RESULTS

Majority of the characteristics of the respondents as shown in the table 1 aged 27-28 years, in the second parity, having senior high school background, working and having moderate level of anxiety. Homogeneity test showed p-value >0.05 in all variables, which indicated that there was no difference of the characteristics of the respondents in the experiment and control group.

Table 1 Characteristics of respondents based on age, parity, education, working status, experience and anxiety level in the experiment and control group

Characteristics	Experiment group	Control group	*P-value*
Age (Year)			
Mean	27.25	27.70	0.075
SD	2.16	2.92	
Median	28	28	
Minimum	24	24	
Maximum	31	33	
Parity			
Mean	1.95	1.75	0.736
SD	0.75	0.63	
Median	2	2	
Minimum	1	1	
Maximum	3	3	
Education (%)			
Junior high school	50	35	0.178
Senior high school	50	65	
Working status (%)			
Working	60	55	0.555
Not working	40	45	
Anxiety level (%)			
Mild	30	40	0.216
Moderate	70	60	
Experience (%)			
Yes	60	50	0.379
No	40	50	

Table 2 Pain levels before and after given intervention in the experiment and control group using Independent t-test

Pain intensity	Experiment group				Control group				*p-value*
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Pretest	6.90	1.021	5	9	6.55	1.146	5	9	0.314
Posttest	4.10	1.165	2	6	6.10	1.021	4	8	0.000
Mean difference	2.80	1.196	5	1	0.45	0.945	2	1	0.000

Table 2 shows that the mean of pain before intervention in the experiment group was 6.90 and in the control group was 6.55 with p-value 0.314 (>0.05), which indicated that there was no significant difference in the mean value of pain intensity before given intervention between experiment and control group. However, the p-value after given intervention was 0.000 (<0.05), indicated there was a statistically significant difference on pain level intensity in both groups with mean value of pain in the experiment group was 4.10 and in the control group was 6.10. The mean difference of pain levels between pretest and posttest in the experiment group was 2.80 higher than pain level in the control group was 0.45.

Table 3 Beta endorphin before and after given intervention in the experiment and control group using Independent t-test

Beta endorphin	Experiment group				Control group				*P-value*
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Pretest	217.61	36.96	120.17	278.63	229.58	49.52	137.72	306.82	0.392
Posttest	280.71	29.03	230.14	333.82	248.08	54.48	124.10	325.13	0.023
Mean difference	63.10	31.30	16.59	119.43	33.87	24.10	-22.79	86.57	0.002

Table 3 shows that there was no difference in beta endorphin levels before given intervention (p=0.392), which indicated that the experiment and control group started in the same level. However, after given intervention there was a significant increase of beta endorphin levels in both groups with p-value 0.023 (<0.05), however, the increase levels of beta endorphin in the experiment group (63.10) was higher than beta endorphin in the control group (33.87).

Table 4 Mean difference of pain intensity and beta endorphin levels before and after given intervention in the experiment and control group using paired t-test

Variables	Experiment group			Control group		
	Mean	SD	p-value	Mean	SD	p-value
Pain intensity level						
Pretest-posttest	2.800	1.196	0.000	0.450	0.945	0.046
Beta endorphin levels						
Pretest-posttest	217.61	54.48	0.000	229.58	49.52	0.033

Paired t-test as shown in the table 4 shows that there was a significant decrease of pain levels in the experiment and control group with p-value 0.046 (<0.05). However, there was a higher decrease of pain levels in the experiment group compared to pain levels in the control group. Similar with beta endorphin levels, there was a significant increase of beta endorphin levels in both groups with p-value 0.033 (<0.05), but the level of beta endorphin in the experiment group (217.61) was higher than the level in the control group (229.58).

DISCUSSION

The aim of this study was to examine the effect of the lavender aromatherapy on pain intensity and beta-endorphin levels among post-caesarean mothers. Findings of this study revealed that there was a significant decrease of pain level and

significant increase of beta-endorphin levels after given lavender aromatherapy (p=<0.05).

The results of this study were in line with previous study indicated that the use of lavender aromatherapy could be effective to overcome the pain and anxiety during the first stage of labor.[13] Similar with Hutasoit stated that lavender has a calming effect so as to provide calmness, balance, and comfort. In addition, lavender aromatherapy can also reduce stress, pain, unbalanced emotions, hysteria, and frustration and panic.[14]

However, pain level in this study is closely related to the receptor and the presence of stimuli. Pain receptors referred to as nociceptors, are very free nerve endings that have slight meilin spread over the skin of the mucosa, especially in the viscera, joints, artery, liver, and gallbladder. Pain receptors can respond to stimulation. The stimulation may be chemical, thermal, electrical, or mechanical. Stimulation by chemicals such as histamine, bradykinin, acetylcholine and substance prostaglandins are chemicals that allegedly can increase the effects of pain and bradykinin. Furthermore, the stimulation received by these receptors is transmitted in the form of implants of pain to the spinal cord by two types of fibers, i.e. fibers A (delta) tightly dyed and slow fibers (C fibers).[15] The impulses transmitted by the delta A fibers have the properties of the inhibitor transmitted to the fibers C. The afferents enter the spinal through the dorsal roots and the synapses on the dorsal horn. Dorsal horn consists of several layers or lamina interlocked. Between layers two and three form the gelatinous substantia that is the main channel of impulse. Then, impulse pain goes across the spinal cord on the interneuron and connects to the most important ascending spinal path; namely the spinothalamic tract path (STT) or spinothalamus and spinoreticular tract (STT) pathways that carry information about the nature and location of the pain. From the transmission process there are two paths mechanism of the occurrence of pain, the path opiate and nonopiate path.[15]

The opiate pathway is characterized by receptor encounters in the brain consisting of the descending spinal path of the thalamus, which passes through the brain and medulla, dorsal bone marrow, conducts with a suppressive impulse nociceptor. Serotonin is a neurotransmitter in impulse in suppressive impulse. The suppressive system further activates nociceptor stimulation transmitted by fibers A. The nonopathic pathway is a descendent pathway that does not respond to the less-known naloxone mechanism.[16] Physiologically, the pain-induced trauma process occurs through four separate processes. Pain transduction is a disturbing process of stimulation that results in electrical activity in pain receptors. Transmission of pain involves the process of channeling impulse from the place of the transduction through the peripheral nerves to the terminal in the spinal cord to the brain. Pain modulation involves neural activity through the descending nerve pathways of the brain that can affect the transmission of pain as high as the spinal cord. Modulation also involves chemical factors that induce or increase activity in the afferent pain receptors. So the perception of pain is a subjective experience of pain that is somehow generated by transmission or neural activity.[15]

Aromatherapy practices include the administration of high concentrations of oils or essences that are distilled from the plant, the nerve fibers in the nose carry sensory input via the olfactory bulbus directly to the limbic system in the brain that is the ancient center of an evolutionary instinct, memory and vital functions are established and organized. All other sensory information is first perceived by more complex parts of the brain and then sends that information to the limbic system. Thus, the sense of smell plays a key and encouraging role. Various odors are also absorbed through the alveoli and skin and then excreted through urine, feces, sweat and exhalation. Essential oils are used to relieve stress and are recommended for a variety of medical conditions.[13]

Literature said that the odor generated from aromatherapy is associated with steroid groups in the sweat glands called osmon. Osmon is potentially a natural chemical sedative that will stimulate brain neurochemistry. A pleasant odor will stimulate the thalamus to release enkephalin that acts as a natural pain reliever and produces a feeling of well-being. Enkephalin, like endorphins, is an endogenous chemical (produced by the body) that is similar in structure to opioids.[16] Exercise relaxation breathing technique with lavender aromatherapy affects the circulation of blood, so that the supply of nutrients to the wound tissue can be fulfilled and the healing process will be faster. Deep breathing techniques can also give the individual self-control when there is a sense of discomfort or anxiety, physical stress and emotions that increase pain. [13]

On the other hand, in relation to beta endorphin, there are three main classes of endogenous opioid peptides each derived from other precursors and have different anatomic distributions, namely enkephalin, beta-endorphin and dinorphine groups. Beta-endorphin is a peptide fragment derived from proopiomelanocortin (POMC), in the pituitary gland. Beta endorphin is present in significant amounts in the hypothalamus and PAG as well as slightly in the medulla and spinal cord. Beta endorphin is a faster-acting analgesic compared to enkefalin.[17] Etherin and enkephalin are other substances in the body that act as inhibitors of pain transmission. Endorphins and enkephalin are substances such as morphine produced by the body that can inhibit the transmission of pain by blocking this impulse transmission in the brain and spinal cord.[18] The presence of enkephalin and endorphins helps to explain how different people feel different levels of pain from the same pain stimuli. Endorphin levels vary among individuals, as do anxiety factors affecting endorphin levels. Individual with much less endorphins feel pain and those with slight endorphins feel more pain. [18] In accordance with the results of this study there was a greater increase in beta-endorphin hormone in the experiment group (p=0.000).

CONCLUSION

There was a significant effect of lavender aromatherapy on the decrease of pain intensity and the increase of beta-endorphin hormone in post-caesarean mothers. There was a significant difference in the mean value of pain intensity and beta-endorphin hormone level before and after given lavender aromatherapy in the experiment and

control group. Therefore, it is expected that lavender aromatherapy can be used as an alternative treatment to reduce pain and increase beta-endorphin levels in post-caesarean mothers.

Declaration of Conflicting Interest

None declared.

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Authorship Contribution

All authors have equal contribution in this study.

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THE IMPACT OF LAVENDER AROMATHERAPY ON PAIN INTENSITY AND BETA-ENDORPHIN LEVELS IN POST-CAESAREAN MOTHERS

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