**The Effectiveness of Lavender Aromatherapy for Dysmenorrheain Adolescence: Literature Review**

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| ARTICLE INFO |  | ABSTRACT |  |
| Article history  Received **27/04/2022**  Revised **21/05/2022**  Accepted **27/07/2022** |  | **Background**: Dysmenorrhea is a common health problem which may have a negative impact for adolescent female at school, workplace, activities and psychological status. **Methods**: The aim of this literature review is to determine the effect of inhalation lavender aromatherapy in adolescent by identifying the dosage, pain scale before and after intervention also the p-value from all articles that has been found. The method used by the author is a literature review. Searching process within an article database from Google Scholar and Science Direct which was recently published in 2016 to 2021 based on the keywords “Lavender aromatherapy and dysmenorrhea”. We found 6 articles that met our inclusion and exclusion criteria. These articles were conducted in Indonesia. **Results**: Based on the results of the review, the authors concluded that the average age of the respondents who experienced dysmenorrhea were in middle adolescence and late adolescence. The inhalation of lavender aromatherapy most dominant used vaporizer for 10 minutes. The average doses of intervention is 5 drops of essential oil. After interventions showed a reduction in menstrual pain scale from moderate to mild. A p value less than 0.05 which means there is significant influence giving inhalation using lavender aromatherapy to decrease dysmenorrhea. **Conclusions**: Inhalation of lavender aromatherapy effectively reduced dysmenorrhea in adolescent female. |  |
| **Keywords**  Dysmenorrhea  Menarche  pain scale  Adolescence female  Lavender Aromatherapy |  |

**1. Introduction**

Adolescent is a transition from children into adulthood. The changes of puberty, allow the reproductive system to become fully functional. One of the hallmarks of puberty in female adolescence is getting a first period or beginning menstruation [1]. Menstruation is one part of a woman’s cycle when the lining of the uterus (endometrium) is shed. [1] . When menstruation occurs, a common disorder happens to adolescents is dysmenorrhea. Dysmenorrhea is pain that comes before or during the menstruation. This pain is caused by prostaglandins. Prostaglandins cause the muscles and blood vessels of the uterus to contract [2] .

The prevalence of dysmenorrheain Indonesia is quite high (2017), 107,673 people (64.25%) who experienced primary dysmenorrhea were 59,671 people (54.89%) and those experiencing secondary dysmenorrhea were 9,496 people (9.36%). About 60% - 75% teenagers experience primary dysmenorrhea. From 30% - 60% teenagers women with dysmenorrhea, there where 7% -15% female adolescence could not go to school [3]. About 40%-70% female adolescence at puberty experienced dysmenorrhea, and about 10% female adolescence could felt dysmenorrhea that causes the disturbance activity everyday. Dysmenorrhea occurs as much as 70%-90% at teenage years and this will affect for academics activity, social activity, and feel hard to exercise [4].

The alternative management for dysmenorrhea is using lavender [4]-[8]. Aromatherapy has a positive effect because of the fresh fragrant and aromatic scent so that could stimulate the body’s sensor and reseptor which affect the other organ, also give the strength effects for controlling the emotions [9]-[11]. Aromatherapy could be applied by inhalation or topically with dabbbing into skin and do a *massage* [7]. Lavender aromatherapy is also used for body treatment or heal an illness just by using essential oil [5]. *Essential oil* works by affect the brain system with the nerves system that control olfactory nerves that stimulates neurotransmitter to increase and could affects the changes of feelings and thoughts[6]. Lavender aromatherapy has the benefit for relieving pain during menstruation [14] [15]. Lavender aromatherapy also could make the expedite of menstrual blood [16].

Some research about the using of lavender aromatherapy in Semarang, 2017 for high school students was carried out with inhalation lavender aromatherapy as fragrance room with dose as much as 3 drops of lavender oil is included to in *vaporizer* Mix 100 ml of water for 30 minutes [8]. This study show that the pain scale of treatment group decrease with an average of 4.48 [9]. Whereas the pain scale of control group decrease with an average of 2.15 [10]. The pain decrease between 2 groups tested using the Mann-Whitney test and obtained the result of p value 0.001 which means there is difference between treatment group and control group [17].

Research in Banyuwangi for adolescence female in 2021, the inhalation of lavender aromatherapy with the method is using a bowl that containing a half of hot water mixed with 5-10 drops of lavender oil [12]. Then inhaled the steam until the smell is disappear [13]. The results show the existence influence from inhalation lavender aromatherapy in primary dysmenorrhea. Before intervention, the respondents experienced a moderate pain, after given intervention the respondents have experience a mild pain [14]. This study analyze by using *wilcoxon* testand the results of *p-value* = 0.000 < 0.05 which means there is influence of giving lavender aromatherapy for primary dysmenorrhea [18]. Research in Boyolali, 2020 about the inhalation of lavender aromatherapy with method smeared on the palm hand with dose 2 drops of oil lavender aromatherapy and inhaled for 10 minutes [16]. The result of this study explains that there is influence inhalation lavender aromatherapy in the control group with moderate pain (31.8%) and treatment group with mild pain (27.3%) [17]. This study analyze by using wilcoxon signed rank test and the results of *p-value* 0.003 0.05. This is proof that lavender aromatherapy could decreas the pain scale of dysmenorrhea [19] .

From the researches above, it is explained about how the intervention of aromatherapy given to the adolescence based on age, inhalation methods, pain scale before and after intervention, doses, inhalation time and its effectiveness. Researcher will analyze how the effectiveness of inhalation by using lavender aromatherapy for adolescence with articles that meet the criteria inclusion.

**2. Materials and Method**

In this study, researcher use *literature review* design. Articles were searched by using the databases from Google Scholar and Science Direct. These articles were selected using *PICOS Framework* according to inclusion and exclusion criteria. Based on the selection article, we found 6 articles that match with the inclusion. This l*iterature review* is discussed about relieving dysmenorrhea in adolescence by the inhalation methods using lavender aromatherapy for analyzing the average age of the respondents, pain scale before and after intervention, doses, inhalation time and its effectiveness.

**3. Results and Discussion**

**3.1. Characteristic Studies**

This *literature review* is made for knowing about the average age of the respondents who experienced dysmenorrhea, how the interventions given from the dosage, the given method and the pain scale pain before and after intervention. There are six articles that we will *review* from *Google Scholar*. The articles selection process was using database from *Google Scholar* and *Science Direct*, but because from Science Direct there is no fulfil inclusion criteria so the article only taken from *Google Scholar*. All of the articles were use a experiment studies. From six *reviewed* articles, it showed that aromatherapy affects for decrease dysmenorrhea. The Inhalation has been done with many ways, using vaporizer tool, inhale the steams from bowl, sipping the aromatherapy from palm hands and also inhale aroma therapy from tissues. The results from six article show that inhalation of lavender aromatherapy effective for overcome dysmenorrhea in adolescents.

**3.2. Characteristic of Respondent’s Age**

The result of this study showed that the characteristics respondent in age, is at age early adolescence at ages 12 to 15 years (1 article), middel adolescence at ages 15 to 18 years (5 articles) and late adolescence at ages 18 to 21 years (2 articles). So that could be concluded that the most dominating experience dysmenorrhea is at age middle adolescence.

**3.3. Given Method and The Effectiveness of Lavender Aromatherapy**

**Table 1.** Given Method and The Effectiveness of Lavender Aromatherapy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Author , Year | Method of Administration and Dosage | Pain Scale Before | Pain Scale After |
| 1. | [16] | Use steaming tool or *vaporizer,* lavender aromatherapy inhaled for 15 minutes with a dose of 2 drops of aromatherapy mixed with 10 ml aquabides. | Moderate pain | No pain and mild pain |
| 2. | [19] | Inhaled the steam in a bowl of lavender aromatherapy and inhaled until the smell disappeared with a dose of 5-10 drops mixed with half hot water in bowl . | Moderate pain | Mild pain |
| 3. | [11] | Use steaming tool or *vaporizer,* inhalelavender aromatherapy for 30 minutes. The given dosage is 3 drops mixed with 100 ml of water. | Before (1st Day):  Moderate pain  Before (2nd Day):  Mild pain | After (1st Day):  Mild pain  After (Day 2)  No pain |
| 4. | [15] | Smearing oil lavender aromatherapy into palm hands and inhaled for 10 minutes. The given dosage given is 2 drops. | Moderate pain | Mild pain |
| 5. | [20] | Give dripping lavender aromatherapy to sheet *tissue* and inhaled for 5 minutes. The given dosage is 3-5 drops. | Mild pain | Mild pain |
| 6. | [6] | Inhale the steam of lavender aromatherapy for 10 minutes with dose of 4-5 drops of oil blended with aromatherapy in 10 ml of water. | Moderate pain | Mild pain |

Table 1 shows that from the given methods, lavender aromatherapy applied to respondents by inhalation in different way. By using steaming tool or *vaporizer* (2 articles), using bowl then inhale the steam (1 article), uses *tissue* (1 article), dab to palm hand and inhaled aromatherapy (1 article) and 1 article not explaining about the instrument. The most dominant way is with using steaming tool or *vaporizer*. The dosage, can concluded that 4 articles use a mixed dose with water and 2 articles do not mixed dose the aromatherapy with water. The average dose given is 5 drops of lavender aromatherapy oil mixed with 10ml-100ml water or half water with average inhalation lavender aromatherapy for 10 minutes.

After the intervention, pain scale decreased. The percentage respondents who experienced heavy pain is 10%, after intervention it decrease to 1%. In moderate pain is 54%, after intervention it decrease to 10%. In mild pain is 36%, after intervention it decrease to 51% and after the intervention, respondents who did not feel pain is 38%. The average decrease scale pain in respondents after intervention is mild pain (scale 1-3) and moderate pain (4-6).

**3.4. The Effectiveness of Lavender Aromatherapy**

**Table. 2** The Effectiveness of Lavender Aromatherapy

|  |  |  |
| --- | --- | --- |
| No. | Author , Year | Effectiveness Lavender Aromatherapy |
| 1. | [16] | *p-value =* 0.000 (<α=0.05) |
| 2. | [19] | *p-value* = 0.000 < =0.05 |
| 3. | [11] | *p-value* = 0.001 (< = 0.05) |
| 4. | [15] | *p-value* = 0.003 < 0.05 |
| 5. | [20] | *p-value* = 0.000 (p<0.05) |
| 6. | [6] | *p-value* = 0.000<- 0.05 |

The *p-* value from six article show that after the intervention by inhalate the lavender aromatherapy to respondents, it showed that there is significant influence to decrease dysmenorrhea. The result of *p-value* is no more than 0.05 which means there is influence giving lavender aromatherapy to decrease dysmenorrhea and show that lavender aromatherapy can efffectively make a lower intensity pain scale for dysmenorrhea in female adolescence.

All *reviewed* articles show that there is significant influence from the inhalation of using lavender aromatherapy decrease the pain scale for adolescence female [21]. The effect of lavender aromatherapy occurs because of lavender aromatherapy contains ingredients named linalyl acetate and lynalool. If there is no given treatment at all, pain will not dissappear or could be increase because of the enhancement production of prostaglandins which can cause stronger uterine muscles contraction [22]. In adolescents with the pain of primary menstruation there is increasing prostaglandins by the endometrium with most releases at the first menstruation for 48 hours and intercourse with the weight symptoms that occur [23]. Before menstruation, prostaglandins increase and when menstruation occurs, prostaglandin levels will decrease. The decreasing prostaglandin production causes painful tend after several day menstruation [20] . Lavender aromatherapy has been proven that is very effective in reduce pain scale of dysmenorrhea based on the results of its *p- value*. According to research conducted by Dewi & Prima (2013), lavender aromatherapy is a therapeutic action as a stimulants that can give relaxation effect for reduce dysmenorrhea. Analysis of this study is using the Wilcoxon test obtained *p-value* = 0.000 (α < 0.05). Besides use lavender aromatherapy, dysmenorrhea could be reduced with use a massage combination and rose aromatherapy [21]. In general, the complaints of variety diseases could overcome with using secondary therapy or herbal medicine [22].

**4. Conclusion**

Based on the results of *literature* review conducted to sixth article about the effectiveness of aromatherapy to intensity dysmenorrhea in adolescents, it could be concluded that the average age of the respondent is at the middle adolescence and late adolescence (14 to 19 years). The most dominant inhalation applied is using steaming tool with average inhalation for 10 minutesandthe average given dose is 5 drops of oil blended lavender aromatherapy with 10ml-100 ml of water or half water in a bowl. The pain scale after intervention becomes decreased. Pain scale decrease with the average of pain is become to mild pain (scale 1-3). From the result of this study it can be concluded that inhalation of lavender aromatherapy is for decrease the intensity of dysmenorrhea in female adolescence.

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**Conflicts of Interest:** I hereby declare that I have no pecuniary or other personal interest, direct or indirect, in any matter that raises or may raise a conflict with my duties.

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