LEMON AROMATHERAPY AS AN ALTERNATIVE TO REDUCE THE INTENSITY OF CHEMOTHERAPY-RELATED NAUSEA AND VOMITING EXPERIENCED BY THE BREAST CANCER PATIENTS

Puji Hastuti¹, Yuli Nurhayati², Dwi Ernawati³, Christina Yuliastuti⁴, Merina Widyastuti⁵
Stikes Hang Tuah Surabaya
Email: pujihastuti@stikeshangtuah-sby.ac.id, pujihastutishtsby@gmail.com

ABSTRACT
The mechanism of breast cancer is the cells growing and breeding become appear abnormal tissue of breast. One of the common treatments for it is chemotherapy using cytotoxic drugs. However, chemotherapy may cause nausea and vomiting as its side effects. Lemon aromatherapy is a complementary therapy in patients with breast cancer who experience nausea or vomiting. The study’s purpose was to know the effect of lemon aromatherapy on the intensity of nausea and vomiting experienced by the breast cancer patients as an effect of chemotherapy in the Chemo Center Room of RSAL Dr. Ramelan Surabaya.

The study was the pre-experimental design with pre-post test without control group. There are two variables, lemon aromatherapy is independent, and the intensity of nausea and vomiting is dependent. The sampling technique was nonprobability purposive sampling, with 34 breast cancer patients taken as the sample. A questionnaire was the instrument for collecting the data. The Data collected were analyzed using the Wilcoxon Test (α = 0.05).

The study’s result indicated that the lemon aromatherapy was effectively to decrease the intensity of nausea and vomiting experienced by the respondents, with the value of Wilcoxon test p < 0.001.

Lemon aromatherapy stimulates the raphe nucleus to produce serotonin. Which function to generate a sense of comfort and calm. For that reason, it can be used as an alternative for taking care of nausea and vomiting experienced by patients with breast cancer as the side effect of chemotherapy.

INTRODUCTION
Breast cancer mechanism is the cells growing and breeding become appear abnormal tissue of breast (Ismonah, 2013). The medical records from the RSAL Dr. Ramelan Surabaya showed that the number of breast cancer patients undergoing chemotherapy was 599 patients in 2015, 406 patients in 2016, and 522 patients in 2017. Studies in the USA showed that 22% - 50% of the patients undergoing chemotherapy experienced nausea and vomiting (Mulyani & Nuryani, 2013). The number of patients who underwent chemotherapy and still experienced nausea...
and vomiting despite being given antiemetics was 12 out of 30 patients in July 2018. Aromatherapy is a treatment applied in addition to main major treatments interventions (Subagyo, 2013). Orange oil is one of the aromatherapies that are refreshing and useful for treating nausea, flatulence, and headaches, as well as arousing appetite (Nursalam, 2017).

**METHOD**

This study’s design was pre-experimental design with a pre-post test without control group (self-control) (Jaelani, 2009). This study was conducted in the Chemo Center Room of RSAL Dr. Ramelan Surabaya from which the population was taken. The population was the breast cancer patients who experienced nausea and vomiting due to chemotherapy, around 40 people per month on average. The sample consists of parts of the population that could be used as research subjects taken through a sampling technique. Sampling is the process of selecting the portions of the population that represent the existing population (Peoples et al., 2016). The number of breast cancer patients who experienced nausea and vomiting due to chemotherapy and met the sample requirements was 34 people taken through the technique sampling of purposive.

The variables were the lemon aromatherapy as independent while the intensity of nausea and vomiting as dependent. The intensity of nausea and vomiting was indicated by using the INVR (Index of Nausea, Vomiting, and Retching) questionnaire. The INVR questionnaire consisted of 8 questions with 5 Likert scale responses (0-4) to be filled out by the respondents (Nasif et al., 2011). The severity nausea and vomiting was measured after the first 12 hours from the insertion of chemotherapy drugs – before the administration of lemon aromatherapy – and the next 12 hours after the administration of lemon aromatherapy. The researcher explained to the respondents about how to use lemon aromatherapy. Lemon aromatherapy should be used after 12 hours from the administration of chemotherapy drugs by dripping 2-3 drops of lemon aromatherapy essential oil on tissue paper and then inhaling it 3 times of breathing for 30 minutes.

The researcher did not observe until the process of chemotherapy was completed but returned to the respondents the next day to scale the intensity of nausea and vomiting they might experience after applying the lemon aromatherapy by distributing questionnaires. The result of the demographic questionnaire and the intensity of nausea and vomiting were made in the form of percentages and narratives. Bivariate analysis was used to identify the difference in the intensity of nausea and vomiting pre and post the lemon therapy intervention (Koensoemardiyah, 2009).

The sample size in this current study was 34 respondents. In the normality test, it was found out that the data was not normally distributed. Therefore, the data analyzed by the Wilcoxon for the intervention group with a p-value = 0.001. The significant level used was 0.05 which means that if p < α = 0.05, the hypothesis is accepted, indicating that there is an influence of lemon aromatherapy on nausea and vomiting’s intensity that reported by the patients with breast cancer who given the chemotherapy in the Chemo Center Room, RSAL Dr. Ramelan Surabaya

**RESULTS**

The study was conducted in the Chemo Center Room of RSAL Dr. Ramelan Surabaya, and the data collection was carried out on January 15-18, 2019. The respondents were 34 breast cancer patients who getting chemotherapy and has nausea...
and vomiting during that therapy. The demographic data were obtained through a questionnaire filled out by the respondents.

Table 1: Characteristics of Respondents Based on the Demographic Data of the Breast Cancer Patients at the Chemo Center Room RSAL Dr. Ramelan Surabaya 15-18 January 2019 (n = 34)

| Demographic data       | Category | Frequency (f) | Percentage (%) |
|------------------------|----------|---------------|----------------|
| Ages                   | 19-29    | 2             | 5,9            |
|                        | 30-40    | 5             | 14,7           |
|                        | 41-51    | 11            | 32,4           |
|                        | >52      | 16            | 47,1           |
| Marital Status         | Married  | 29            | 85,3           |
|                        | Single   | 3             | 8,8            |
|                        | Divorced | 2             | 5,9            |
| Number of Children     | 1 child  | 5             | 14,7           |
|                        | 2 children| 18            | 52,9           |
|                        | > 2 children| 7             | 20,6           |
|                        | Do not have children| 4 | 11,8 |
| Live with              | Family   | 32            | 94,1           |
|                        | Relative | 1             | 2,9            |
|                        | Orphan   | 0             | 0              |
|                        | Etc.     | 1             | 2,9            |
| Chemotherapy Cycle     | 2         | 2             | 5,9%           |
|                        | 3         | 5             | 14,7%          |
|                        | 4         | 16            | 47,1%          |
|                        | 5         | 5             | 14,7%          |
|                        | 6         | 6             | 17,6%          |

Table 2: Characteristics of Respondents by Drug Administration to the Breast Cancer Patients at Chemo Center Room of RSAL Dr. Ramelan Surabaya, 15-18 January 2019 (n = 34)

| No | Name of Drugs given | Frequency (f) | Percentage (%) |
|----|---------------------|---------------|----------------|
| 1  | Brexel, Epirol      | 7             | 20,6%          |
| 2  | Carboplatin, Dexotaxel | 1           | 2,9%          |
| 3  | Carboplatin, Funcopac | 1           | 2,9%          |
| 4  | Carboplatin, Paclitaxel | 11       | 32,4%         |
| 5  | Carboplatin, Paxomed  | 6             | 17,6%         |
| 6  | Cyclophosphamide     | 1             | 2,9%          |
| 7  | Cyclophosphamide, brexel | 1       | 2,9%          |
| 8  | Cyclophosphamide, dexorubicin | 1 | 2,9%         |
| 9  | Cyclophosphamide, epirubicin | 1       | 2,9%          |
| 10 | Cyclophosphamide, 5FU | 1             | 2,9%          |
| 11 | Dextaxel, epirubicin  | 1             | 2,9%          |
| 12 | Dextaxel, dextrubicin | 1             | 2,9%          |
| 13 | Paclitaxel, epirubicin | 1        | 2,9%          |
|    | Total               | 34            | 100           |

Table 3: The effect of Lemon Aromatherapy on the Intensity of Nausea and Vomiting experienced by the Breast Cancer Patients as the effect of Chemotherapy in the Chemo Center Room of RSAL Dr. Ramelan Surabaya, 15-18 January 2019 (n = 34)

| The intensity of nausea and vomiting | before intervention | After intervention |
|--------------------------------------|---------------------|--------------------|
|                                      | Frequency (f)       | Percentage (%)     |
| No nausea and no vomiting            | 0                   | 1                  | 2,9                |
| Mild                                 | 11                  | 32,4%              | 30                 | 88,2               |
| Medium                               | 21                  | 61,8%              | 2                  | 5,9                |
The result showed that the breast cancer patients before being given lemon aromatherapy was mostly on the medium scale of nausea and vomiting, amounting to 21 respondents (61.8%). The amount changed after being given lemon aromatherapy was mostly on a mild scale, amounting to 30 respondents (88.2%). This indicated that there was a decrease in the degree of nausea and vomiting from a medium-scale to a mild scale. In other words, there is an increase in the number of respondents whose intensity of nausea and vomiting decreases from the medium scale to the mild scale after the administration of lemon aromatherapy. Based on the result of the Wilcoxon test, it was found out that there was an effect of lemon aromatherapy on nausea and vomiting's intensity that reported by the patients with breast cancer who given the chemotherapy in the Chemo Center Room of RSAL Dr. Ramelan Surabaya with a p-value of 0.001 (<0.05).

DISCUSSIONS

The result supports previous studies that conducted by Widagdo. His research showing that “Lemon aromatherapy and progressive muscle relaxation affected the decrease of the intensity of nausea and vomiting during chemotherapy”(H. & K., 2007). The benefits of lemon aromatherapy include improving mood, accelerating healing of diseases, improving health and well-being of the body, mind, and spirit (14,12). Zorba and Isdemir (2018) explained about aromatherapy that showing in their research, “The approaches of nonpharmacological are recommended for CINV’s management (Chemotherapy Induced Acute Nausea and Vomiting). It is often combined with alternative medicines such as massage”(Widagdo, 2014). Potter, et al. (2011) conducted research in different groups with the number of participants are 34 the cancer patients during autologous HPC infusion given citrus therapy. The intervention group has relief nausea and vomiting level (RI, 2015). Aromatherapy does not only work when there is interference but also maintain the stability or balance of the system contained in the body. Fellowes, Barnes and Wilkinson (2004) said that aromatherapy confer short term benefits on psychological wellbeing and it may also reduce of nausea and vomiting’s symptom in patients who are given treatment of cancer (D et al., 2016). The result of this current study is also supports the result of the research conducted by Auwaliyah showing that the administration of lemon aromatherapy has the effect of reducing nausea and vomiting in the first trimester of pregnancy (p = 0.002)(Apriyani, 2010).

The self-nursing in providing comfort to reduce or eliminate any discomfort due to the side effects of chemotherapy is by giving complementary therapy. Aromatherapy, as a part of complementary therapy, can be used to increase of the quality of cancer patient’s life(Dharma, 2011). Aromatherapy is extracted from roots, flowers, leaves, and stems of plants as well as from certain trees. One of the aromatherapies that are widely used is lemon aromatherapy (Citrus Lemon) (Setyoadi & Kushariyadi, 2011). The benefits of lemon aromatherapy include improving mood, accelerating healing of diseases, and improving health and well-being of the body, mind, and spirit(Subagyo, 2013). It is often combined with alternative medicines. Aromatherapy does not only work when there is interference but also maintain the stability or balance of the system contained in the body. It may also

| Heav | 2   | 5.9 | 1   | 2.9 |
|------|-----|-----|-----|-----|
| Total| 34  | 100 | 34  | 100 |

Result of Wilcoxon Test p = 0.000
reduce of nausea and vomiting in patients who given treatment of cancer (Widagdo, 2014). Lemon aromatherapy is one of the complementary therapies of non-pharmacological treatment to breast cancer patients who experience nausea, vomiting due to chemotherapy through the olfactory process.

CONCLUSIONS
Lemon aromatherapy reduces the intensity of nausea and vomiting experience on the patient’s breast cancer as the chemotherapy’s effect in the Chemo Center Room of RSAL Dr. Ramelan Surabaya. The odor will then be transmitted as a message to the olfactory center located behind the nose. Neuron cells interpret the odor and deliver it to the limbic system, which is then sent to the hypothalamus. The contents of the elements of aromatherapy will physiologically correct the imbalance that may occur in the body. The calming odor stimulates an area in the brain called the raphe nucleus to produce serotonin. It functions to generate a sense of comfort and calm, which may decrease the reported of nausea and vomiting’s complaint.

ACKNOWLEDGMENT
The study has been carried out because of supported by the breast cancer’s patients, The Head of RSAL dr. Ramelan Surabaya, The Head of Cemo Center Room, and all who support until the completion of this research.

REFERENCES
Apriyani, D. (2010). Pengaruh terapi musik terhadap mual muntah lambat akibat kemoterapi pada penderita kanker pada anak usia sekolah. http://lontar.ui.ac.id/file=13719 9-T Dyna Apriany.pdf

D, M., Y, S. D., & U, M. M. (2016). Pengaruh Inhalasi Aromaterapi Lemon Terhadap Morning Sickness Pada Ibu Hamil Di Wilayah Kerja Puskesmas Tulang Bawang Tahun 2016. 2(3).

Dharm. (2011). Metodologi Penelitian Keperawatan, Panduan Melaksanakan Dan Menerapkan Hasil Penelitian. CV. Trans Info Medis.

H., T. T., & K., R. (2007). Obat-obat penting : khasiat, penggunaan, dan efek-efek sampingnya (ke enam). PT Elex Media Komputindo.

Jaelani. (2009). Aroma Therapi. Yayasan Pustaka Obor Indonesia.

Koensoemardiyah. (2009). Aromaterapi Untuk Kesehatan, Kebugaran Dan Kecantikan. Andi.

Mulyani, & Nuryani. (2013). Kanker Payudara dan PMS pada Kehamilan. Nuha Medika.

Nasif, Junaidi, & Muchtar. (2011). Efektivitas antiemetik pada pasien yang menggunakan siostatika pasca bedah pada berbagai jenis kanker di rumah sakit umum daerah dr. Achmad mochtar bukit tinggi. http://jstf.farmasi.unand.ac.id/index.php/jstf/article/viewFile/56/5/9

Nursalam. (2017). Metodologi Penelitian Ilmu Keperawatan : Pendekatan Praktis (4th ed.). Salemba Medika.

Peoples, A. R., Roscoe, J. A., Block, R. C., H., C. E., Ryan, J. L., Mustian, K. M., & Dozier, A. M. (2016). Nausea and disturbed sleep as predictors of cancer-related fatigue in breast cancer patients : multicenter NCORP
study. Supportive Care in Cancer. https://doi.org/10.1007/s00520-016-3520-8

RI, P. D. dan I. K. K. (2015). Stop Kanker. Departemen Kesehatan.

Setyoadi, & Kushariyadi. (2011). Terapi Modalitas Keperawatan Pada Klien Psikogeriatrik. Salemba Medika.

Subagyo, A. (2013). Mual dan muntah akibat kemoterapi. http://www.klikparu.com/2013/05/mual-dan-muntah-akibat-kemoterapi.html

Widagdo, P. A. (2014). Pengaruh aroma terapi lemon dan relaksasi otot progresif terhadap penurunan intensitas mual muntah setelah kemoterapi pada pasien kanker payudara di Rumah Sakit Telogorejo Semarang. http://ejournal.stikestelogorejo.ac.id/index.php/jikk/article/view/318/341