STIKep PPNI Jawa Barat, Bandung - INDONESIA
National Cheng Kung University Hospital - TAIWAN
Bandung, 16th – 17th July, 2018

Conference Book
International Conference on Health Care and Management

“Evidence to inform action on supporting and implementation of SDGs”

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July 16th - 17th
Bandung - West Java
- Indonesia
2018

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2018

“Evidence to inform action on supporting and implementation of SDGs”
Conference Book – Table of Contents
International Conference on Health Care and Management-2018

Welcome Message .................................................................................................................. 4
Conference Committee ......................................................................................................... 8
Conference Program ............................................................................................................. 10
Presentation Schedule .......................................................................................................... 14
Speaker Biographic ................................................................................................................ 30
Information ............................................................................................................................ 43
Assalamualaikum Warahmatullahi Wabarakatuh

Dear honorable guests,

Sustainable Development Goals (SDGs) as an agreement of sustainable development objectives agreed by all countries at the 2015 UN sessions. Each country including Indonesia has an obligation to implement this joint development plan by applying universal, integration and inclusive principles by ensuring that no one missed or “No-one Left Behind” Indonesia has Nawa Cita or 9 priority agenda which should synergize with SDGs and can be used as health program application in Indonesia to also achieve SDGs.

On behalf of the organizing committee and the Nursing Society of Indonesia, I am glad to invite you to join ICHM 2018 (International Conference on Health Care and Management) in Bandung, Indonesia on July 16-17, 2018.

The conference is expected to reveal some solutions for evidence-based health care and scientific facts to be discussed by various viewpoints from diverse speakers from around the world with the title “Evidence to inform action on supporting and implementation of SDGs. Through the International Conference is expected to improve health services, especially in the field of nursing in Indonesia to improve the human development index.

We hope all participant could benefit from the exciting program and will surpass your expectation and that will be an inspiring event.

Warm regards,

Dhika Dharmansyah
Conference chair
Assalamu'alaikum Wr.Wrb
Good morning and best wishes for all of us.

Ladies and gentlemen, in such a great and happy day, let’s praise and thank to Allah Swt who has given us grace and mercy to all of us to gather in this International Conference on Health Care Management event today.

First of all, we would like to gratitude and appreciate highly to national Cheng Kung University Hospital has given the opportunity and confidence to our institution STIKep PPNI Jabar for the second time in collaboration to organize International Conference on Health Care Management with theme: “Evidence to inform action on supporting and implementation of SDGs”. This event is one of follow up The memorandum of Understanding between NCKUH with STIKep PPNI Jabar.

STIKep PPNI Jabar is as a nursing education institution carry out the mandate to create professional nurse, we must implement all TRIDHARMA University activities in academic atmosphere that aims to broaden and improve nursing and existence of nurse profession capacity in nation developing continually.

As we know the university academic quality is determined by its researches and graduates result quality. The research work results may be either a right against managing intellectual wealth equity as well as scientific work which is able to be publicized through scientific journals and scientific gathering forums of the same scientist background both in national and international level.

Nevertheless, the publishing of journal researches is published by its university. Nowadays, it is irregular because there are both financial and scientific manuscript availability drawbacks. Scientific regular manuscripts are very limited because manuscript contributor is only from its university as well.

The high education Research and technology ministry data in 2017, it stated that there were an increase of research work publishing done by practitioners, academicians and researchers of Indonesian. The amount of Indonesian research publishing on international journal certifiable indexed Scopus tended to increase. The high education Research and technology ministry data on December 1st 2017 noted that Indonesia scientific research publishing reached 14.100 journals. Meanwhile, on October 1st 2017 there were as many as 12.098 journals.

However, internally nurse profession scientific research journals are still less of publishing. It is alleged to the low of quantity and quality publishing about nursing. One of the drawbacks is rarely the interaction between nursing scientists and experts in scientific conferences. Some efforts are carried out by STIKep PPNI to encourage and to accelerate sharing knowledge amongst the nursing experts. Accordance to the goals, National Cheng Kung University Hospital Taiwan and STIKep PPNI have made MoU and held as this International conferences organizer. Hopefully, it is able to bridge all stakeholders, practitioners, and academicians in supporting the quality of the human resources especially, nurses and health workers as well.
The honourable ladies and gentlemen,
Nowadays, in the global era, the transformation runs rapidly and consequently it makes the knowledge based society. Information and communication technology development are very important in on its role in manifesting society development based on the knowledge. The higher education of society will be higher of health service quality demands specially nurse.

Accordance to the effort, this International conference aims to,
1. Facilitate the knowledge sharing between health experts and nurses to encourage the goal of health human resource quality.
2. Produce health scientific and nursing articles deserve to be published on international scopus indexed journal.
3. Make communication networking amongst Universities, research institution, nurse practitioners, and other stakeholders.

I truly believe that all participants through the 2 days in international conference, our goals above are able to be manifested well.

Finally, I would like to thank to all of participants diligently and with spirit of attending this international conference on health care management.

Wish the conference is able to be knowledge sharing event and delightful and successful as well, the conference will be enlightened and interchange will do great help for us after attending this conference, especially STIKep PPNI Jabar and generally for all profession nurses to provide health services to communities, aamiin ya robbal alamin.

Wassalamu'alaykum Wr.wb.
Kindest regards,

The Dean of STIKep PPNI Jabar
Excellencies, Distinguished Delegates, Ladies and Gentlemen,
Selamat Siang,

I’m ChyunYu Yang, the superintendent of National Cheng Kung University Hospital in Tainan, Taiwan. On behalf of our hospital, it is my pleasure and privilege to welcome all of you to participate in the international conference on health care and management 2018. To our eminent speakers and delegates who have come from UK, Netherlands, Korea, Japan, Thailand, Singapore, Taiwan, and Indonesia, I bid you a very warm welcome to Bandung. We are indeed honoured to have you here with us. We have about 1,000 participants from different places in Indonesia and countries gathered here today, making our conference a truly meaningful one.

This is our second time collaborating with STIKEP PPNI Jawa Barat to hold an international conference. Last year, we had a very successful conference with the theme focused on infection control and disaster management. And this year, our conference theme is “evidence to inform action on supporting and implementation of SDGs”.

The Sustainable Development Goals (SDGs) known as the global goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. Goal 3 addresses all major health priorities and calls for improving reproductive, maternal and child health; ending communicable diseases; reducing non-communicable diseases and other health hazards; and ensuring universal access to safe, effective, quality and affordable medicines and vaccines as well as health coverage.

However, the world seems still far from ending maternal mortality, with more than 303,000 deaths in pregnancy or childbirth occurring annually. NCDs are also a growing problem, causing 40 million deaths in 2015. But, all in all, we can take comfort in the fact that SDGs indicators are moving in the right direction. Yet we still have plenty of work to do.

I wish in the next two days and a half, we have the opportunity - and indeed the responsibility - to prepare and add knowledge related to the current situation and progress reflection of SDGs. In closing, I encourage delegates to participate actively in the interesting discussions over the next two days. I wish everyone a successful and fruitful conference.

Thank you.
Conference Committee

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THE EFFECT OF FOOT REFLEXOLOGY ON INTENSITY OF PAIN IN BREAST CANCER PATIENTS IN GENERAL HOSPITAL CENTER Dr. HASAN SADIKIN BANDUNG

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ABSTRACT

Introduction: The prevalence of pain in patients with breast cancer remains high at an average of 40-89%. Pain experienced by patients with breast cancer during her lifetime and if not managed properly will have a negative impact on quality of life. Pharmacological therapy is given still cause side effects so other therapies needed that could minimize dependence on analgesic drugs. Foot reflexology in other studies has been shown to reduce pain intensity, but no studies to determine the duration of the proposed interventions in reducing pain, especially in patients with breast cancer. This study aimed to identify the effect of foot reflexology towards pain intensity in breast cancer patients at Dr. Hasan Sadikin Hospital.

Methods: This quasi-experimental study used the model of a one-group time series design involving 15 breast cancer patients recruited with purposive sampling. Each respondent received foot reflexology three times in three days sequentially, in which the reflection point massage are the pituitary gland, vertebrae area, thyroid gland, adrenal, breast, diaphragm and lymphatic system. Massage is performed for 30 minutes (15 minutes per foot) with each reflection point given massage 30x/sec. Scores of pain intensity were measured using a numeric rating scale instruments before and after each treatment. The data were analyzed using descriptive analysis and inferential test (Friedman and Wilcoxon Post Hoc).

Results: Results showed the characteristics of respondents mostly middle-aged adults, are married, have a problem in financial status, had experienced pain before and less than half of the cancer stage III B. The pain intensity after third treatment significantly lower than that after 2nd treatment (p-value = 0.0001), 1st treatment (p-value = 0.001) as well as pain scores before the treatment (p-value = 0.001). Also pain intensity after 2nd treatment significantly lower than 1st treatment (p-value = 0.002), and before treatment (p-value = 0.0001).

Conclusion: It can be concluded that there is a significant effect of foot reflexology on reducing pain intensity, especially after 2nd treatment. Results of this study make that foot reflexology important as part of nonpharmacological pain management in breast cancer patients.

Keywords: breast cancer, foot reflexology, pain.

PRELIMINARY
Cancer is one cause of death in addition to cardiovascular disease. Estimated at the beginning of 2015, there will be a surge in cancer cases of more than 20 million, especially in developing countries (Ferlay et al., 2014). In Indonesia, according to data from Basic Health Research (Riset Kesehatan Dasar - Riskesdas) in 2013 it was recorded that the prevalence of cancer reached 1.4 per
1,000 population or about 330,000 people, with the most number of cancer is breast cancer. This increase in prevalence requires appropriate treatment with associated symptoms.

Pain is one of the most feared symptoms of cancer patients (Van den Beuken-van Everdingen et al., 2008). Based on data from the International Association for the Study of Pain (IASP), the prevalence of pain in breast cancer patients is in the range of 40-89% (Satija et al., 2014). According to Black et al. (2012), 90% of cancer patients experience pain throughout the disease. Yang, Sun, Lu, Pang, and Ding (2012) suggest that the prevalence of pain is estimated at 25% of patients newly diagnosed with cancer, 33% in patients undergoing anti-cancer therapy and more than 75% in patients with advanced stage.

Pain experienced by cancer patients during the process of disease. According to Yang, Sun, Lu, Pang, and Ding (2012), the incidence of pain is estimated at 25% of patients newly diagnosed with cancer, 33% in patients undergoing anti-cancer therapy and more than 75% in patients with advanced stage. Research by Shiuann Wu, Natavio, Davis, and Yarandi (2013) found that more than half of cancer patients (62.8%) had moderate to severe pain. So it is with breast cancer patients. Satija et al. (2014) reported that about 40-89% of breast cancer patients experience pain.

Pain from cancer can affect physiological, psychological, social, mental, and life-quality degradation, as well as the burden of suffering from patients, families, and communities (Yang et al., 2012). Physiologically, prolonged pain can trigger stress. O'Connor et al. (2009) explains that stress caused by pain can affect immune suppression through excessive release of pro-inflammatory and chemokine cytokines, resulting in a decrease in the number of natural killer cells that play a role in fighting cancer cells (Irwin, 2008), increasing the risk of cancer cell metastases (Aggarwal, Shishodia, Sandur, Pandey, & Sethi, 2006).

Benyamin et al. (2008) explain that non-steroidal anti-inflammatory drugs (NSAIDs) are usually more tolerable and have few side effects such as nausea, vomiting, gastric disorders, hepatic or renal dysfunction. However, NSAIDs as a single analgesic have the disadvantages of a ceiling effect, meaning the use of doses greater than recommended is not a justified way. When the intensity of cancer pain is increased (moderate to severe), an increase in NSAID dose is not followed by an increase in analgesic efficacy (Eisenberg et al., 1994 in Mitra & Jones, 2012)

Hasan Sadikin Hospital as the main referral hospital of West Java Province recorded data of breast cancer patients in the period April to September 2015 amounted to 1270 patients. Based on interviews that researchers do, patients often complain of severe pain, various types of painkillers continue their consumption to reduce pain, ranging from low doses to increased doses but the effect of these drugs can not relieve pain permanently. Pain is reduced for a few moments and again felt by the patient.

Nurses as the longest-standing health profession interact with patients should be more sensitive in assessing pain complaints and helping patients cope. According to Wilkinson (2007), nurses have a more active role in teaching patients self-management in the face of pain. Also, the involvement of patients with nurses in controlling pain by minimizing analgesic side effects will improve patient satisfaction, reduce maintenance costs, and speed up the length of stay (Peterson & Bredow, 2004).

Nursing interventions in the form of non-pharmacological therapy into one part of the act of nursing that can be given independently to overcome the pain in breast cancer patients. Reflexology is one that is preferred by many breast cancer patients (Lengacher et al., 2006). Reflexology is defined by The International Institute of Reflexology as a manual technique which refers to the theory that there is a zone of reflection in the area of the feet and hands connected with all glands, organs, and other body parts (Stephenson & Dalton, 2006). Any pressure or massage at the points of reflection can
stimulate an increase in the circulation of blood flow thus providing a relaxation sensation and maintaining body homeostasis (Embong et al., 2015). Foot reflexology is a part of reflexology that applies pressure to specific areas of the feet called dots or reflection zones (Stephenson, Swanson, Dalton, Keefe, & Engelke, 2007).

Research on the effect of foot reflexology on the decrease of pain in various diseases both acute and chronic has been done, but specifically, in breast cancer patients, the number of studies is still limited. Taha and Ali (2011) conducted a study of the effect of foot reflexology on rheumatoid arthritis patients in relieving pain. A total of 38 patients in the intervention arm performed a 45-minute reflexology with three times intervention; the results showed a decrease in pain \((p<0.001)\). Another study was conducted by Stephenson et al. (2007) of 42 cancer patients with metastases, namely lung cancer, breast cancer, colon and lymphoma cancer who received foot reflexology for 30 minutes with one intervention found a decrease in pain \((p=0.001)\).

From the three studies above shows that foot reflexology is effective in reducing pain. However, a similar study conducted by Wyat et al. (2012) show different results. A total of 382 respondents of advanced breast cancer were divided into three groups: foot reflexology group \((n=146)\), light foot massage \((n=143)\) and control group \((n=96)\). The intervention group was given foot reflexology once a week for four weeks; the results found no significant effect on the decrease in pain intensity.

The difference in the results of the above study is due to the different duration of foot reflexology. Embong et al. (2015) state that there is no consensus explaining the duration of foot reflexology agreed between the investigators, nor is there a specific study that addresses the provision of suggested interventions.

The purpose of this study was to identify the influence of foot reflexology on the pain intensity of breast cancer patients.

**METHODOLOGY**

The design used in this research is quasi-experimental with one group time series design model. The population in this study were all breast cancer patients treated at the General Hospital Center Dr. Hasan Sadikin Bandung. Sampling technique used is purposive sampling. The inclusion criteria established in this study were adult (28-40 years old) and middle adult (41-60 years) patients, stage I - III B breast cancer patients undergoing chemotherapy, patients experiencing pain complaints with mild-moderate pain scale, patients receiving NSAID-type analgesic therapy, mild-moderate anxiety level, patients not experiencing skin infections and edema of the lower extremities, the patient is fully conscious and oriented towards people, time and place, the patient is domiciled in the Bandung area or who lives temporarily around halfway house.

Based on the established inclusion criteria, found 15 breast cancer patients eligible to be respondents in this study. This research has been done in Women Ward Care Room of Kemuning Building, 3rd Floor, Fresia 1 and 2 Rooms, and Chemotherapy Polyclinic of General Hospital Dr. Hasan Sadikin from June to July 2016.

Instruments to be used in this study are as follows:

1. Questionnaire
   This questionnaire contains about demographic data, consisting of 4 questions including age, marital status, previous pain experience. This instrument is used to get a picture of the characteristics of respondents who experience pain.

2. Hamilton Anxiety Rating Scale (HAM-A) Instrument
Instrument HAM-A is used to measure the anxiety level of respondents as a benchmark of the fulfillment of inclusion criteria of respondents at the screening stage. HAM-A consists of 14 questions that contain feelings of anxiety, tension, fear, difficulty sleeping, physical complaints, and behavior. Range value of each item on HAM-A from 0-4 and a total score of 56. Interpretation score <14 indicates no anxiety, 14-17 mild anxiety score, 18-24 medium anxiety, and >25 severe anxiety.

(3) Numeric Rating Scale (NRS) Instrument
In this study, the NRS instrument is used to examine the intensity of pain felt by respondents. This measurement scale allows patients to choose pain on a scale of 0 to 10. This scale is excellent for assessing pain intensity before and after therapeutic intervention. This scale gives the total patient freedom in identifying the severity of the perceived pain. The degree of pain is obtained through self-report by mentioning the number on the NRS pain scale. The results of the measurements were the score of 0 including the category of no pain, 1-3 scores included on the scale of mild pain, score 4-6 including medium pain scale, and the score of 7-10 including the category of severe pain.

Stages of data collection in this study are as follows:
(1) Licensing stage: after the submission of the proposal is approved by the academic; then the academic side gives permission letter to research the institution.
(2) Perform screening of respondents who meet the inclusion criteria. Researchers and nurses identify the stage of cancer, the analgesic type used by medical records to determine inclusion criteria.
(3) Researchers introduce themselves and explain the intent and purpose of research to prospective respondents.
(4) The researchers provided information on the study and measured pain intensity using the Numeric Rating Scale (NRS) instrument and anxiety levels using the Hamilton Rating Scale for Anxiety (HAM-A) instrument.
(5) Respondents who meet the inclusion criteria are asked to be willing to participate in the research and sign the approval sheet of the research subject.
(6) Researchers began to collect data characteristic of respondents then explain the procedure of foot reflexology intervention.
(7) Before the intervention, the researcher ensures that the respondent has not received analgesic therapy.
(8) Respondents were given foot reflexology intervention for 30 minutes, with each leg 15 minutes, then measured the intensity of post-intervention pain.
(9) To avoid any conflict of interest, the measurement of the intensity of post-intervention pain involves family members who have previously been taught how to assess pain, whereas, for the measurement of pain intensity when the patient is in hospital, the researcher involves the room nurse.
(10) The foot reflexology protocol used refers to the foot reflexology protocol developed by Stephenson et al. (2007) combined with two reflection points from Wyatt et al. (2012) ie some vertebrae and lymphatic system areas, as well as the Observation Protocol of Level II Reflection Massage Competency Assessment for Reflexologist Assistant (2015). The area of massage or emphasis of the points of reflection are as follows: pituitary gland reflection point; vertebrae area, vertical cervical spine reflection point 1-7, thoracic vertebrae 1-12, lumbar vertebrae 1-5; a point of reflection of the thyroid gland; the point of adrenal gland reflection; breast reflection point; diaphragm reflection point; the point of reflection of the lymphatic system. Each point is massaged or suppressed for a 30x/sec.
Foot reflexology interventions were conducted by the researchers themselves. Researchers intervene with the number of respondents 2-3 people per day.

The intervention is carried out three times over three days at the same time.

Stage of data processing: after data retrieval is done then will proceed with data processing which includes editing, coding, data entry, and cleaning. Editing is done to ascertain whether the data has been collected is fully and clear and consistent. Coding is done to facilitate the processing of data, i.e. suppose by changing the data in the form of letters into numbers or numbers. Data entry is the process of entering the data that has been obtained which is then analyzed through a computer or manual process. Cleaning is a re-check of data already in the entry related to the possibility of an error. This study uses a computer system to perform data analysis processing. Data analysis used in a univariate analysis, data normality test, and bivariate analysis.

Univariate analysis was performed to describe the characteristics of the respondent and the intensity of the pain. The researcher conducted a univariate analysis with two objectives: first, descriptive analysis of research variables performed to describe each variable studied separately by making a frequency table of each variable studied including age, marital status, financial status, stage of cancer and experience pain before.

In this univariate analysis, the categorical data is explained by the frequency distribution by the percentage or proportion size, whereas the numerical data is explained by the mean, median and standard deviation, as well as the minimum value and the maximum value at the 95% confidence interval (CI). Numerical data in this study is the intensity of pain.

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Data type/ scale</th>
<th>Data description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Variable Independent : Foot reflexology</td>
<td>Categorical / Nominal</td>
<td>The amount, percentage (%)</td>
</tr>
<tr>
<td>2</td>
<td>Variable dependent : Pain intensity</td>
<td>Categorical / Interval</td>
<td>Mean, median, min-max, SD, CI 95%</td>
</tr>
<tr>
<td>3</td>
<td>Variable characteristics of respondents: Age</td>
<td>Categorical / Ordinal</td>
<td>The amount, percentage (%)</td>
</tr>
<tr>
<td>4</td>
<td>Variable characteristics of respondents: Marital status</td>
<td>Categorical / Nominal</td>
<td>The amount, percentage (%)</td>
</tr>
<tr>
<td>5</td>
<td>Variable characteristics of respondents : Financial status</td>
<td>Categorical / Nominal</td>
<td>Amount, percentage (%)</td>
</tr>
<tr>
<td>6</td>
<td>Variable characteristics of respondents : Cancer stadium</td>
<td>Categorical / Ordinal</td>
<td>Amount, percentage (%)</td>
</tr>
<tr>
<td>7</td>
<td>Variable characteristics of respondents : Experience the previous pain</td>
<td>Categorical / Nominal</td>
<td>Amount, percentage (%)</td>
</tr>
</tbody>
</table>
The bivariate analysis aims to explain differences in pain intensity felt by respondents. Before the bivariate analysis conducted normality data test that aims to determine the distribution of data whether normal or not. Normality test data used is the Shapiro-Wilk test.

### Data Normality Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>CI95% of Mean</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before intervention</td>
<td>4.36-5.51</td>
<td>0.010</td>
</tr>
<tr>
<td>First intervention</td>
<td>3.74-5.06</td>
<td>0.218</td>
</tr>
<tr>
<td>Second intervention</td>
<td>2.92-4.02</td>
<td>0.029</td>
</tr>
<tr>
<td>Third intervention</td>
<td>1.65-3.02</td>
<td>0.035</td>
</tr>
</tbody>
</table>

Based on the above table the normality test results from the four data groups found that the data before the intervention \( (p\text{-value} = 0.010, \alpha < 0.05) \), post the first treatment \( (p\text{-value} = 0.218, \alpha > 0.05) \), post the second treatment \( (p\text{-value} = 0.029, \alpha < 0.05) \), and post the third treatment \( (p\text{-value} = 0.035, \alpha < 0.05) \), thus the data on the first treatment post are normally distributed \( (\alpha > 0.05) \), whereas the data before the intervention, the second treatment post, and the third treatment post were not normally distributed \( (\alpha < 0.05) \). Due to the result of normality data analysis showed not normal distributed hence bivariate analysis which used by researcher is the Friedman test. Friedman test is used to prove the hypothesis of the presence or absence of different intensity of pain before and after the treatment of foot reflexology to 1, 2 and 3.

### Bivariate Analysis

<table>
<thead>
<tr>
<th>Variable independent</th>
<th>Variable dependent</th>
<th>Statistic test</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 1st treatment</td>
<td>Friedman test</td>
</tr>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 2nd treatment</td>
<td></td>
</tr>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 3rd treatment</td>
<td></td>
</tr>
</tbody>
</table>

Friedman test results found a significant difference so that followed by Post Hoc analysis by Wilcoxon test listed in the following table:

### Post Hoc Analysis

<table>
<thead>
<tr>
<th>Variable independent</th>
<th>Variable dependent</th>
<th>Statistic test</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 1st treatment</td>
<td></td>
</tr>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 2nd treatment</td>
<td></td>
</tr>
<tr>
<td>The intensity of pain before treatment</td>
<td>The intensity of pain after 3rd treatment</td>
<td></td>
</tr>
<tr>
<td>The intensity of pain after 1st treatment</td>
<td>The intensity of pain after 2nd treatment</td>
<td></td>
</tr>
<tr>
<td>The intensity of pain after 1st treatment</td>
<td>The intensity of pain after 3rd treatment</td>
<td>Wilcoxon test</td>
</tr>
</tbody>
</table>
The intensity of pain after 2\textsuperscript{nd} treatment \hfill The intensity of pain after 3\textsuperscript{rd} treatment

\begin{tabular}{|c|c|c|}
\hline
Characteristics of Respondents & Frequency (n) & Percentage (%) \\
\hline
\textbf{Age} & & \\
\text{average (SD)} & Early adult & \\
45.13 (8.63) & (27-38 yo) & 4 & 26.7 \\
\text{Mature adult} & (45-57 yo) & 11 & 73.3 \\
\hline
\textbf{Marital status} & & \\
 & Married & 13 & 86.7 \\
 & Widow & 2 & 13.3 \\
\hline
\textbf{Financial status} & & \\
 & Without problem & 4 & 26.7 \\
 & With problem & 11 & 73.3 \\
\hline
\textbf{Cancer stadium} & & \\
 & IIA & 2 & 13.3 \\
 & IIB & 3 & 20.0 \\
 & IIIA & 3 & 20.0 \\
 & IIIB & 7 & 46.7 \\
\hline
\textbf{Experience the previous pain} & & \\
 & Never & 5 & 33.3 \\
 & Ever & 10 & 66.7 \\
\hline
\end{tabular}

Based on the data above shows that the majority of respondents middle adult age (73.3\%), married status (86.7\%), have problems in financial status (73.3\%), and claimed to have experienced previous pain (66, 7\%), whereas less than half of respondents were in stage III B cancer (46.7\%).
Based on the graph above shows that there are five respondents who experienced a decrease in the intensity of pain in each treatment both treatment of 1st, 2nd and 3rd. Six respondents began to decrease the intensity of pain after the 2nd treatment. Meanwhile, four respondents, the decrease in pain intensity occurred after the 1st treatment, but the score did not change in the 2nd treatment and decreased at the 3rd treatment. From the data shows that the intensity of pain in the 15 respondents almost all decreased.

**Table of Pain Intensity of Breast Cancer Patients before and after 1st, 2nd and 3rd Foot Reflexology Intervention**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median (min-max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensity of pain before treatment</td>
<td>5.00 (3.00- 6.00)</td>
</tr>
<tr>
<td>Intensity of pain after 1st treatment</td>
<td>4.00 (2.00- 6.00)</td>
</tr>
<tr>
<td>Intensity of pain after 2nd treatment</td>
<td>3.00 (2.00- 5.00)</td>
</tr>
<tr>
<td>Intensity of pain after 3rd treatment</td>
<td>2.00 (1.00- 5.00)</td>
</tr>
</tbody>
</table>

The data in the table above shows a decrease in pain intensity after treatment is given.

**Bivariate Analysis**

Normality test to know that the distribution of data in this study is normal or not, the researcher uses analytical methods with the Shapiro-Wilk test because of the number of respondents ≤ 50 people. Normality test results show that all distributed variables are not normal except for variables of pain intensity after the 1st intervention.

The bivariate analysis in this study was used to see differences in pain intensity at the time before treatment and after the treatment of 1st, 2nd and 3rd. Due to the data is not normally distributed, then the statistical calculation by Friedman test.
Table of Foot Reflexology Treatment Influence 1st, 2nd, and 3rd of Pain Intensity of Breast Cancer Patients (n=15)

<table>
<thead>
<tr>
<th>Pain Intensity</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before treatment</td>
<td></td>
</tr>
<tr>
<td>After 1st treatment</td>
<td>0.0001</td>
</tr>
<tr>
<td>After 2nd treatment</td>
<td></td>
</tr>
<tr>
<td>After 3rd treatment</td>
<td></td>
</tr>
</tbody>
</table>

Based on the four data sets above, it was found that the intensity of pain after treatment was statistically significant (p-value = 0.0001), so it was followed by post hoc analysis by Wilcoxon test as follows:

Table of Friedman Analysis Results Followed by Post-Hoc Wilcoxon Test (n = 15)

<table>
<thead>
<tr>
<th>Comparison of pain intensity</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intensity of pain before treatment - The intensity of pain after 1st treatment</td>
<td>0.003</td>
</tr>
<tr>
<td>The intensity of pain before treatment - The intensity of pain after 2nd treatment</td>
<td>0.0001</td>
</tr>
<tr>
<td>The intensity of pain before treatment - The intensity of pain after 3rd treatment</td>
<td>0.001</td>
</tr>
<tr>
<td>The intensity of pain after 1st treatment - The intensity of pain after 2nd treatment</td>
<td>0.002</td>
</tr>
<tr>
<td>The intensity of pain after 1st treatment - The intensity of pain after 3rd treatment</td>
<td>0.001</td>
</tr>
<tr>
<td>The intensity of pain after 2nd treatment - The intensity of pain after 3rd treatment</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The data in the table above shows that the pain intensity after 3rd treatment is significantly lower than the pain intensity after the 2nd treatment (p-value = 0.0001), the 1st treatment (p-value = 0.001) and before the treatment (p-value = 0.001). It was also found that between the 2nd treatment was significantly lower than the 1st treatment (p-value = 0.002), and before the treatment (p-value = 0.0001). Therefore it can be said that the more treatment, the lower the intensity of the pain.

DISCUSSION

The results of this study prove that there is the influence of foot reflexology to decrease the intensity of pain in breast cancer patients. Based on the table, the median pain intensity decreased during each treatment. Clinically, the pain category used to describe pain intensity in this study refers to the provision of numerical rating scale instrument that is 0 = no pain, 1-3 mild pain, 4-6 moderate pain and 7-10 severe pain. Thus, the results of Table Pain Intensity of Breast Cancer Patients before and after 1st, 2nd and 3rd Foot Reflexology Intervention data can be interpreted that the median of pain intensity before treatment and after treatment 1 is in moderate pain category, although the score is lower on that after treatment 1 (median before treatment = 5, after 1st treatment = 4). As for the 2nd and 3rd treatment medians, the pain intensity was in the mild pain category where the 3rd treatment had a median lower than the 2nd treatment (median 2nd treatment = 3, 3rd treatment = 2). This finding is in line with a study by Stephenson et al. (2007) that foot reflexology may decrease the intensity of pain in breast cancer patients immediately after treatment.

From the graph shows the picture of the decrease in the intensity of pain that varies from each respondent. The decrease of pain in each treatment happened with respondent with varying stages, i.e. 2A, 2B, 3B, and 3A, while the decrease of pain intensity which started after 2nd treatment was mostly experienced by respondents with stage 3A and 3B. The significance of the decrease in pain intensity
that appears there is a difference, there is a significant decrease there is also a less significant so that the significant difference can be an indicator of success and less successful intervention.

The foot reflexology protocol in this study is one that supports the success of the intervention. The protocol used refers to a study conducted by Stephenson et al. (2007) and Wyatt et al. (2012). Stephenson et al. (2007) focus the point of reflection associated with pain control including the areas of the pituitary gland, thyroid gland, adrenal, breast, and diaphragm, whereas Wyatt et al. (2012) recommends several points in the area of the vertebrae and lymphatic system.

Tennant (2013) writes that pain stimulation leads to increased levels of serum hormones secreted by the adrenal glands, gonads and thyroid - cortisol, pregnenolone, DHEA, progesterone, estrogen, triiodothyronine (T3) and thyroxine (T4). These hormones are needed in the control of pain. The involvement of these hormones has been demonstrated in a randomized controlled trial study conducted by McCullough, Liddle, Sinclair, Close, & Hughes (2014) on 697 breast cancer, heart failure, chronic obstructive pulmonary disease (COPD) and multiple sclerosis patients to examine the effects of reflexology on pain and anxiety through the physiology and biochemical parameters of the body, the results found a significant decrease in cortisol levels in the breast cancer patient group.

The next reflection point is the diaphragm. Bordoni & Zanier (2013) revealed that the diaphragm muscles not only play a role in the respiratory process but also affect the vascular and lymphatic systems. The mechanism of action of the lymphatic flow, aided by diaphragmatic contractile labor, in this case, respiration acts as a modulator of cardiovascular control. Relation to the pain response, described by Pattinson (2008) that pain can stimulate respiration, substance P and natural killer (NK) act as an intermediary of nociception and respiration. Thus there is a relationship between the response of pain and respiration.

Next is the reflection point in the vertebral area. It is believed that the emphasis of the reflection point in this area is related to the modulation mechanism and transmission of pain involving multiple organs in the vertebrae to the brain. This is in line with Guyton & Hall (2008) which suggests pain modulation occurs peripherally in nociceptors, spinal cord, or in supraspinal structures. The anatomy of the spinal cord or spinal cord lies in the thoracic vertebrae.

The last point of reflection is the lymphatic system. The lymphatic system consists of lymphocytes, lymph nodes, tonsils, spleen and thymus gland, one of which maintains the immune system. In a study conducted by Mousa et al. (2004) found that immune cells can synthesize β endorphins because immune cells process mRNA transcripts for proopiomelanocortin (POMC), a large protein meloid that can divide into small melokul including β endorphins. The bond between β endorphins and opioid receptors (type mu) is expressed on the surface of natural killer cells (NK). The presence of these bonds stimulates NK cells resulting in increased expression of cell adhesion molecules, cytotoxic molecules (granzyme B and perforin), TNF and cytokine secretion (IFN-γ) in microcellular environments. The process triggers the tumoricidal activity of NK cells and the ability of NK cells to eliminate tumor cells and control tumor growth. Also, at the level of the peripheral nervous system, β-endorphin and opioid receptor blocks inhibit the release of substance P, causing analgesia effects that may decrease the perception of pain.

Duration or duration of intervention, determine the success of foot reflexology. In this study, the duration of each session is done for 30 minutes (15 minutes per foot). This is in line with research conducted Stephenson et al. (2007), Chang (2007), Wyat et al. (2012) and Dalal et al. (2014) who intervene foot reflexology with a duration of 30 minutes. As revealed by Jeongsoom et al. (2011) that the foot reflexology session should be minimal for 30 minutes, adjusted to the meridian cycle in the Traditional Chinese Medicine (TCM) paradigm of 28 minutes.
Another success factor is the amount of pressure or massage given at each reflection point. In this study refers to the foot reflexology protocol Stephenson et al. (2007) which provides massage or pressure for a 30x/sec at each reflection point. According to Hendro & Ariani (2015), to determine the amount of pressure or massage, depending on the condition of the patient. In the concept of TCM, the patient’s condition is divided into a condition of energy shortage (yin) characterized by the patient appearing weak, while the condition of excess energy (which) is marked by the patient looks tense, looks severe pain, hot flush and body temperature above normal. If the patient is in a yin condition, then the message is given as much as 30x/sec, while the patient is in a given condition of 60x/sec massage. In addition, Dalal et al. (2014) recommends that to achieve a therapeutic effect, massage or pressure is performed for 15-30x/sec.

At the time of the intervention, respondents showed different responses. Researchers found that most respondents reported pain during a massage at the point of reflection of the breast. In respondents with stage III cancer, pain also occurs when the emphasis area of the lymphatic system. There are two stage IIIB respondents who feel pain at almost any point of reflection. Pain response is related to the process of cancer travel.

The existence of stimulation in the form of pressure at the point of reflection of the lymphatic system in respondents of stage III cancer cause pain. This is because according to Smeltzer & Bare (2008), in stage III cancer occurs metastasis to the lymphatic area. Furthermore, Mantyh et al., (2003), Guyton (2008) and Potter & Perry (2010) explain that the expenditure of chemical mediators will activate the action potentials in the free nerve endings or pain receptors, and then the pain impulse is carried by the C fibers transmitted to neurons along the afferent fibers. Wu (2009) explains that pressure at a particular point of reflection can cause pain if C fibers are stimulated.

Characteristically, pain in breast cancer is divided into nociceptive and neuropathic pain. Nociceptive pain itself consists of somatic pain and visceral pain. Based on reported pain respondents, in general patients difficult to localize the pain felt. Five respondents complained of pain especially felt in the breast and spread to the back area. Seven respondents reported pain accompanied by aches felt spread from armpits to arms. Therefore it can be concluded that the pain felt by the respondent belongs to the visceral pain.

The source of the pain comes from infiltration and tumor cell compression. According to Mantyh, Clohisy, & Koltzenburg (2002) infiltration and tumor compression can lead to nociceptors activation both mechanically and chemically that stimulate the expulsion of inflammatory mediators such as proton, endothelin, prostaglandin, bradykinin and nerve growth factor so that it can cause pain. At the same time, the pain impulse of foot reflexology causes a pain-stimulating competition (cancer pain and pain due to the massage of the point of reflection). The competing pain impulse reaching the cerebral cortex simultaneously produces a cognitive distraction effect in the inhibition of pain perception. This is caused by pressure or massage at the painful point of reflection producing a sensory signal to close the pain gate in the dorsal horn and stimulate the production of a pain-suppressor neurotransmitter called endorphins. Endorphins work by blocking pain that occurs naturally in the brain and spinal. Furthermore, pain signals that achieve the dorsal horn in the spinal cord stimulate endorphin activation to block and alter the pain message.

In this study found significance decrease pain intensity score more significant after treatment of second and third (p-value = 0.0001). As is known in previous research conducted by Taha and Ali (2011) and Eghbali et al. (2012), the three-time foot reflexology intervention within three days was reported to decrease pain intensity (p-value <0.001). Thus, the number of interventions tend to influence the decrease in pain intensity. In this study, it was found that the minimum giving of foot reflexology intervention twice as much has a better influence in reducing the pain intensity score.
The findings are supported by the theory put forward by Porter (1997) in Samuel (2011) that the effectiveness of foot reflexology in influencing organs depends on the intensity of the stimulus. The first massage aims to initiate the response of the mechanoreceptor on the skin, so it will be more effective if foot reflexology is done more than once. Tiran & Chummum (2005) explains that during foot reflexology the stimulus of pressure or massage causes the receptors in the leg area to become sensitive which leads to physiological changes through peripheral vasodilation.

During the study, no side effects were experienced by the respondents. Based on the data of respondents' development after being given intervention or treatment (attached), most reported feeling more relaxed and able to sleep more soundly. One respondent reported that he was able to return to his usual prayer activities while lying down. Other respondents reported being able to perform bath activities and change their clothes that previously had to be assisted by her husband. Four respondents reported a usual dose of paracetamol taken, while two respondents said the stiffness felt less.

From several reports, the respondents showed improvement in the fulfillment of daily activities and decreased risk of dependence on the use of analgesic. This is in line with Gibson (2007) which states that one of the goals of pain management is to improve the quality of life of patients characterized by improved functional statuses such as ability to perform daily activities, which is achieved by minimizing the side effects of analgesics, while reducing the negative emotions that associated with pain, such as anxiety and depression.

The individual characteristic factors that influence the success of the intervention based on the characteristics of the respondents, from the data obtained that most respondents (73.3%) are in the middle age group. According to Wilkinson & Treas (2011), the risk of cancer increases with age, where cancer diagnosis occurs in middle-aged and elderly.

Smeltzer & Bare (2008) explained that age is very influential on pain. Gibson & Farrell (2004) in his study found that as age increases, cellular and neurochemical changes of nociceptive affect the perception of pain. The meta-analysis study conducted by Lautenbacher (2012) showed a tendency to increase the pain threshold and decreased tolerance threshold with age. Adults sometimes report pain if it is pathologic and malfunctioning (Singh & Lewallen, 2008).

In this study also obtained respondents at the age of 27 years. In a longitudinal study conducted by Green & Hart-Johnson (2012) to examine the effect of age on pain in young and old patients, it was found that younger patients more often experienced pain with more constant frequency. This is in line with previous studies that reported that breast cancer patients under the age of 40 were more likely to report pain (Gartner et al., 2009).

Another success factor is that most of the respondents are married. As Keefe & France (1999) pointed out in Somchock (2012) that although pain is a personal experience, it can affect and be influenced by those around him. According to Montoya et al. (2004), couples are the most significant source of support for patients in the face of disease problems; such support may be helpful in addressing more adaptive pain. Undergoing breast cancer with the absence of a spouse can add a source of stressors to the patient.

Another finding that most respondents (73.3%) have problems in their financial status. In line with research conducted by Yun et al. (2004) that problems in financial status can affect the perception of pain in cancer patients. Problems in financial status trigger anxiety for most people. According to Potter & Perry (2010), anxiety often increases the perception of pain. Otherwise pain can also cause anxiety.

Cancer stage IIIB occupy the highest number in this study that is equal to 46.7%, while respondents stage IIA is the least number (13.3%). The study by Goudas et al. (2005) found that the prevalence of cancer pain correlates with the location of cancer and the stage of the disease. Also,
Yang et al. (2012) in its study of 643 cancer patients in China, reported a prevalence of pain experienced by more than 75% in advanced-stage cancers. It can be said that the intensity of pain tends to increase along with the increase in the stage of cancer.

Respondents in this study as much as 66.7% had previous pain experience. Smeltzer & Bare (2008) revealed that the experience of someone who has managed to overcome pain in the past, if this same pain arises, then it will be easier to overcome the pain. But the existence of previous experience does not mean the individual will be more easily accept the pain in the future. According to Potter & Perry (2010), the frequency of past pain often enough without treatment or suffering from more severe pain can cause anxiety or even recurring fear.

A person who has pain experience will find it easier to recognize pain and adapt to it. Potter & Perry (2010) states that chronic pain in cancer patients indicates the pain has been experienced for a long time to enable a person to adapt to the pain he felt. As Hermayanti (2014) disclosed that a person who responds positively (adaptive) to the disease could show calmer behavior, patient, steadfast, full of confidence to be able to face the trials that must be taken in the span of his life.

Other inclusion criteria taken in this study were patients who received analgesic therapy NSAID type paracetamol. Before the intervention, respondents certainly have not received analgesic therapy. As discussed in the previous chapter, this type of analgesic works by binding to the COX-1 and COX-2 prostaglandin synthetase, thus inhibiting the synthesis of prostaglandins as a result of the non-activated nociceptor system. The choice of the drug is explained by Becerra et al. (2003) that in place of tumor growth occurs inflames process, which marked with an elevation of COX-2.

Eisenberg et al. (1994) in Partners & Jones (2012) suggests that the weakness of NSAIDs as a single analgesic is the effect of a ceiling effect. Thus the use of larger doses than recommended is not the justified way. When the intensity of cancer pain is increasing (moderate to severe), increased doses of NSAIDs are not followed by increased analgesic efficacy. To avoid this, it is necessary to nurse role in teaching self-management of patients in the face of pain (Wilkinson, 2007).

Complementary therapy in the form of foot reflexology can be one option of pain management in cancer patients, where this therapy is used also, not a substitute for drug therapy (pharmacology). One benefit of using this type of therapy may reduce the risk of side effects from the use of analgesics will thus help in reducing patient costs and improve patient satisfaction with nursing services.

**CONCLUSIONS AND SUGGESTIONS**

**Conclusions**

Characteristics of breast cancer respondents who experienced pain include most middle-aged adults, married status, having problems with financial status, had previous pain and less than half were in stage III B cancer.

There was a significant difference of breast cancer intensity between pain intensity score before treatment with after treatment 1st, 2nd, and 3rd.

There is a significant difference in breast cancer pain intensity after the 2nd and 3rd treatment, where the more treatment the significance of the decrease in pain intensity will be lower.

**Suggestions**

Foot reflexology can serve as an independent nursing intervention in the form of non-pharmacological pain management in breast cancer patients, with massage protocols such as pituitary gland reflection point, vertebrae area, thyroid gland, adrenal gland, breast, diaphragm and lymphatic
system. This action lasts for 30 minutes (15 minutes per foot) with each reflection point given a 30x/sec massage, which is done at least twice a week.

This research should be continued by identifying the effectiveness of foot reflexology on the decrease of pain intensity using a hemodynamic parameter with mix method design. Also, a similar study can be done by looking at how long the effects of pain reduction can last.

BIBLIOGRAPHY


